IAS ORIGIN
HERE IT BEGINS
Powered by Ecoholics

IAS ORIGIN

YOUR PATHWAY TO UPSC SUCCESS

Important Topics (12th to 18th May)

Table of Contents

IMPORTANT TOPICS (12 TO 18TH OF MAY)

GEOTUBING: A BREAKTHROUGH IN COASTAL EROSION CONTROL

News: A recent study has found that **geotubing technology deployed at Poonthura, Kerala,** has been highly effective in controlling coastal erosion.

Coastal erosion poses a significant threat to India's extensive 7,517 km coastline, impacting ecosystems, infrastructure, and livelihoods. Innovative solutions like geotubing have emerged as effective measures to combat this challenge.

India's coastline is facing severe erosion, with 33.6% of its shoreline classified as vulnerable.

India's coastline length has been revised to 11,098.81 km following a new methodology for measurement.

Previously, the official coastline length was 7,516.60 kms.

MORPHOLOGY OF THE INDIA COAST

It consists of 43% sandy beach, 11% rocky coast, 36% of muddy flats, 10% of marshy coast, 97 major estuaries and 34 lagoons.

The National Centre for Coastal Research (NCCR) (an attached office of the Ministry of Earth Sciences) has been monitoring shoreline changes since 1990, using remote sensing and GIS mapping techniques.

ACCORDING TO THE NCCR:

- **33.6%** of India's coastline is eroding, impacting coastal communities and infrastructure.
- **26.9%** of the coastline is experiencing accretion, meaning land is expanding due to sediment deposition.
- **39.6%** of the coastline remains stable, showing minimal changes in shoreline position.
- West Bengal **(60.5%)**, Kerala **(46.4%)**, and Tamil Nadu **(42.7%)** are among the most affected Indian states.

Sl. No	State	Landforms and features
East coast of India		
1	**Tamil Nadu**	Deltas, long narrow beaches, spits, tidal flats, mangroves, coral reefs, sand dunes, Ridge swale complex etc.
2	**Andhra Pradesh**	Deltas, long narrow beaches, spits, mangroves, cliffs, long sand dunes, Ridge swale complex etc.
3	**Odisha**	Deltas, long beaches, spits, tidal flats, long sand dunes, ridges etc.
4	**West Bengal**	Large delta, very thick mangroves, tidal channels, islands, dunes, tidal flat, beaches etc

West Coast of India		
5	**Kerala**	Estuaries, lagoons, barriers, spits, dunes, tombolo, cliff, beaches etc
6	**Karnataka & Goa**	Estuaries, spits, sand dunes, tombolo, cliff, wave cut platforms, beaches etc
7	**Maharashtra**	Estuaries, cliffs, small sand dunes, tombolo, cliff, wave cut platforms, pocket beaches etc
8	**Gujarat**	Marshy land, tidal flats, estuaries, cliffs, mud flats, mangroves wave cut platforms, beaches etc.

WHAT IS GEOTUBING TECHNOLOGY?

Geotubing involves the use of large, durable geotextile tubes known as geotubes filled with sand or dredged materials. These structures are strategically placed along coastlines to act as barriers against wave action, thereby preventing erosion and promoting sediment accumulation.

KEY FEATURES:

- **Composition:** Made from high-strength, woven polypropylene geotextiles.
- **Functionality:** Serve as submerged breakwaters, dissipating wave energy.

- **Environmental Impact:** Encourage natural beach formation and are less intrusive compared to traditional hard structures.

GEOTUBING IN INDIA: IMPLEMENTATION AND IMPACT

India has adopted geotubing in various coastal regions to mitigate erosion:

- **Poonthura, Kerala:** A project involving offshore geotube breakwaters has been effective in controlling erosion and facilitating beach restoration.
- **Pentha Village, Odisha:** Installation of geotubes along a 500-meter stretch has provided significant protection against sea intrusion.
- **Mumbai, Maharashtra:** Studies have shown that geotubes effectively reduce erosion rates along the city's shoreline.

CAUSES OF COASTAL EROSION IN INDIA

Coastal erosion in India results from a combination of natural and anthropogenic factors:

NATURAL CAUSES:

- **Wave Action and Tidal Currents:** Continuous wave action, especially during storms and high tides, erodes the shoreline.
- **Sea-Level Rise:** Climate change-induced sea-level rise increases the vulnerability of coastlines to erosion.
- **Storm Surges:** Cyclones and storm surges can cause sudden and severe erosion.

HUMAN ACTIVITIES:

- **Sand Mining:** Excessive sand mining from beaches and riverbeds disrupts sediment balance.
- **Coastal Infrastructure:** Construction of ports, harbors, and seawalls can interfere with natural sediment transport.
- **Deforestation:** Removal of mangroves and coastal vegetation reduces natural barriers against erosion.

GOVERNMENT INITIATIVES AND MITIGATION MEASURES

The Indian government has implemented several strategies to address coastal erosion:

- **Coastal Regulation Zone (CRZ) Notification, 2019:** Aims to conserve coastal stretches, protect marine areas, and secure livelihoods for coastal communities.
- **Mangrove Plantation:** Programs to increase mangrove cover act as natural barriers against erosion.
- **Installation of Geotubes:** Projects in states like Kerala and Odisha have utilized geotubes for shoreline protection.
- **National Centre for Coastal Research (NCCR):** Conducts assessments and provides guidelines for coastal protection measures.
- **Integrated Coastal Zone Management Project (ICZMP):** It is a **World Bank-assisted project** aimed to protect and conserve

coastal and marine environments through sustainable practices, implemented in **Gujarat, Odisha, and West Bengal.**

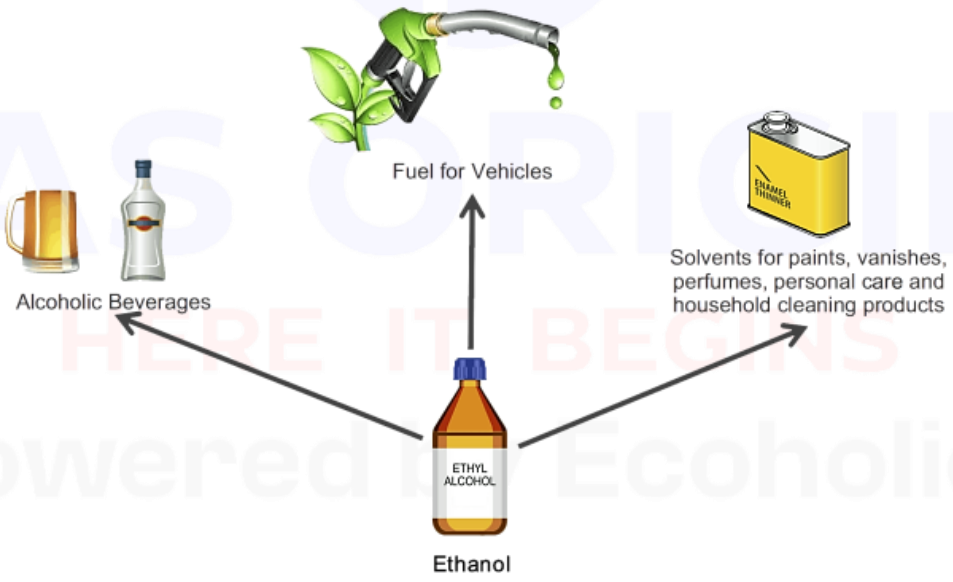
- **Coastal Vulnerability Index (CVI):** The **Indian National Centre for Ocean Information Services (INCOIS)** has developed the CVI to assess and map the vulnerability of different coastal regions based on various parameters.
- **Shoreline Protection Measures:** The **National Assessment of Shoreline Changes** provides erosion control guidelines.
- **15th Finance Commission Allocation:** ₹2,500 crore earmarked for resettlement of displaced communities and erosion mitigation measures.

CENTRE APPROVES ADDITIONAL FCI RICE FOR ETHANOL PRODUCTION

The Indian government's recent approval of an additional 2.8 million tonnes of Food Corporation of India (FCI) rice for ethanol production, raising the total allocation to 5.2 million tonnes for the 2024–25 ethanol supply year, has significant implications for energy policy, food security, and agricultural economics.

WHAT IS ETHANOL?

- **Ethanol** is an **organic alcohol-based fuel** produced from renewable sources like **sugarcane, maize, broken/damaged grains, and surplus rice/wheat**.
- It is used as a **biofuel** and can be blended with petrol to reduce vehicular emissions.



WHAT IS ETHANOL BLENDED PETROL (EBP) PROGRAMME?

LAUNCH:

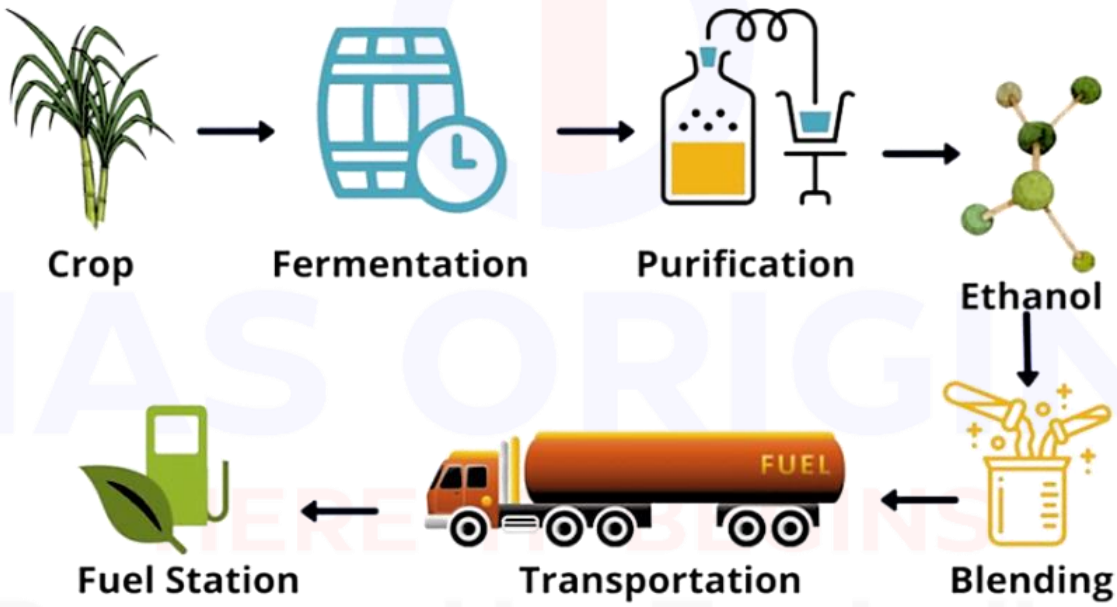
- Initially launched in **2003** in 9 states.
- Revamped and accelerated under the **National Policy on Biofuels 2018**.

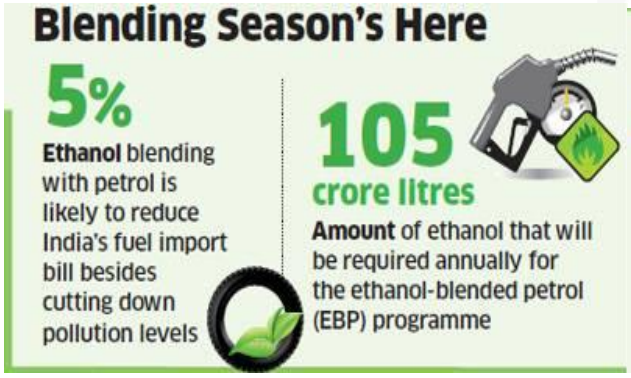
OBJECTIVES:

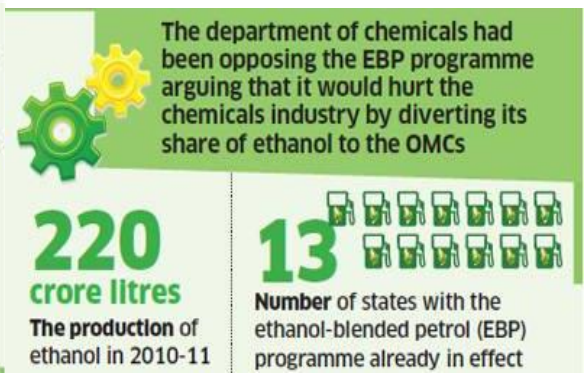
- **Reduce import dependence** on petroleum.
- **Promote cleaner fuel** by reducing carbon monoxide and carbon dioxide emissions.
- **Provide alternative revenue stream** to farmers.
- **Utilize surplus food grains** effectively.

TARGET:

- Initially: 10% blending (achieved in 2022).
- **Current Target**: **20% ethanol blending with petrol by 2025** (called **E20 target**).







ETHANOL BLENDING GRADES

- **E5, E10, E20**: Denotes the percentage of ethanol in petrol (e.g., E20 = 20% ethanol + 80% petrol).
- **E100**: Pure ethanol – used in countries like Brazil (not used in regular Indian vehicles yet).

FEEDSTOCKS USED FOR ETHANOL

Category	Sources
1st Generation (1G)	Sugarcane juice, molasses, maize, surplus rice/wheat
2nd Generation (2G)	Agricultural waste, crop residue (e.g., rice husk, straw)
3rd Generation (3G)	Algae-based biofuels (still under R&D stage)

PROGRESS ACHIEVED

Year	Ethanol Blending %
2014	~1.5%
2022	10.2%
2025 (Target)	20%

In **2022–23**, India saved **over ₹41,500 crore in oil import bills** and reduced CO_2 emissions by **27 lakh tonnes**.

IMPLEMENTATION AND MECHANISM

- **Oil Marketing Companies (OMCs)** like IOCL, HPCL, and BPCL procure ethanol from sugar mills and grain distilleries.
- Ethanol is blended with petrol at refineries and retail fuel stations.

BENEFITS OF THE EBP PROGRAMME

ENERGY SECURITY

- India imports ~85% of its crude oil. Ethanol blending reduces dependency.

ENVIRONMENTAL SUSTAINABILITY

- Ethanol-blended fuel emits fewer greenhouse gases and pollutants.

FARMER WELFARE

- Helps farmers by creating demand for sugarcane, maize, and surplus grains.

WASTE UTILIZATION

- Utilizes damaged food grains and agricultural residues that would otherwise go to waste.

CHALLENGES AND CONCERNS

FOOD SECURITY CONCERNS

- Diverting FCI grains (like rice) may affect PDS and poor households' food access.

WATER AND ENVIRONMENTAL COST

- Crops like sugarcane and rice are **water-intensive**, raising concerns about groundwater depletion.

INFRASTRUCTURE DEFICIT

- Need for more ethanol distilleries, pipelines, and blending facilities.

VEHICLE COMPATIBILITY

- Most vehicles in India are currently designed for up to **E10 or E20** fuel. Higher blends may cause engine corrosion if not adapted.

GOVERNMENT MEASURES TO SUPPORT EBP

- **National Bio-Energy Mission**
- **Interest subvention scheme** for setting up ethanol plants.
- **Differential pricing policy**: Ethanol from sugarcane and grains has different pricing mechanisms.
- **SATAT Scheme** for promoting compressed bio-gas (CBG) alongside ethanol.

WHAT IS SIGNIFICANCE OF THE MOVE?

- **Energy Security**: Utilizing surplus rice for ethanol production can help India reduce its reliance on imported crude oil, thereby enhancing energy security.
- **Environmental Benefits**: Ethanol-blended petrol burns cleaner than pure petrol, leading to reduced emissions of greenhouse gases and pollutants.
- **Economic Utilization of Surplus Stocks**: The FCI often holds surplus rice stocks beyond buffer norms. Diverting this surplus for ethanol production can prevent wastage and generate economic value.
- **Support to Farmers**: Increased demand for rice for ethanol can provide farmers with better price realization and reduce the burden of surplus stock management.

WHAT ARE THE CONCERNS REGARDING THE MOVE?

- **Food Security**: Diverting rice from FCI stocks to ethanol production raises concerns about food availability for the Public Distribution System (PDS), especially for vulnerable populations.
- **Price Inflation**: Increased demand for rice for ethanol could lead to price hikes, affecting affordability for consumers.
- **Environmental Concerns**: Rice cultivation is water-intensive. Encouraging more rice production for ethanol may exacerbate water scarcity issues.
- **Policy Consistency**: There have been instances where FCI halted rice supply for ethanol, indicating potential policy uncertainties that can affect stakeholders.

WHAT IS THE FOOD CORPORATION OF INDIA (FCI)?

Established in 1965 under the Food Corporations Act, the FCI is a statutory body under the Ministry of Consumer Affairs, Food and Public Distribution.

MANDATE:

- **Procurement**: Purchases wheat and rice at Minimum Support Prices (MSP) to support farmers.
- **Storage**: Maintains buffer stocks to ensure food security.
- **Distribution**: Supplies food grains to states for distribution under the PDS.
- **Price Stabilization**: Intervenes in the market to stabilize food grain prices.

INDIA'S RICE PRODUCTION AND CLIMATIC CONDITIONS

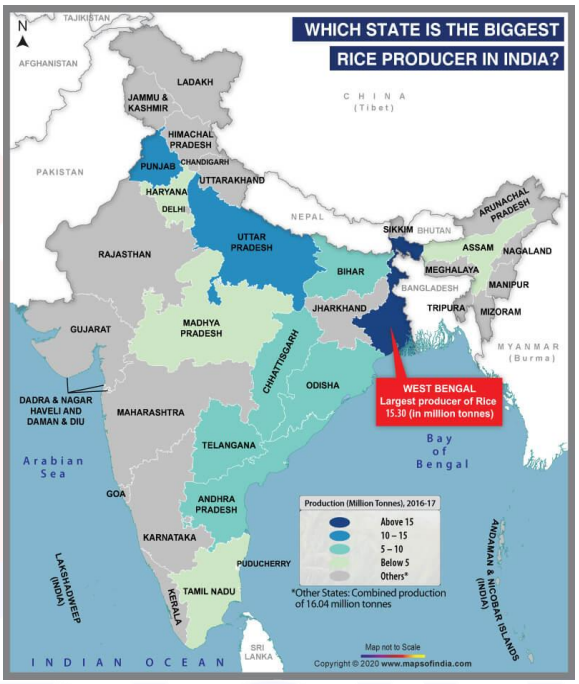
PRODUCTION STATISTICS:

- India is the second-largest producer and consumer of rice globally, contributing approximately 20% of global production.

- In the 2025/26 season, India is projected to produce 222 million tonnes of rice.

CLIMATIC CONDITIONS FOR RICE CULTIVATION:

- **Temperature**: Requires a warm climate with temperatures between 20°C and 35°C.
- **Rainfall**: Optimal rainfall is around 1,621 mm annually. Both excessive and deficient rainfall can adversely affect yields.
- **Soil**: Prefers alluvial, loamy, or clayey soils with good water retention.
- **Water Requirement**: Approximately 4,000 liters of water are needed to produce 1 kg of



In India, Rice is mainly Kharif crop majorly in Northern states. But also cultivated as Rabi crop in West Bengal, Assam, Tamil Nadu, Odhisa & Andhra Pradesh.

GLOBAL STATUS OF RICE

- Global rice production in 2025 is estimated at 538.7 million tonnes.
- India is the largest exporter of rice, with exports projected to reach 22.5 million tonnes in 2025.

- Major rice-producing countries include China, India, Indonesia, Bangladesh, and Vietnam.

RICE CULTIVATION AROUND THE GLOBE

The irrigated rice ecosystem represents of

54%

the **world's harvested area** of rice

and provides

75%

of the **world's rice production**

The **rainfed lowland environment** accounts

30%

of the world's harvested area of rice

and produces

20%

of the **world's rice production**

In the rainfed upland environment, rice grown under aerobic conditions represents

9%

of the **world's harvested area**

and contributes to only

4%

of the **world's total rice production**

Flood-prone environments account for

7%

(11 million ha)

of harvested area

and contribute

1%

(16.5 million ha)

to the total **global rice population**

CONCLUSION

The decision to allocate additional FCI rice for ethanol production aligns with India's goals for energy security and environmental sustainability. However, it is imperative to balance these objectives with concerns about food security, price stability, and environmental sustainability. Policymakers must ensure that such initiatives do not compromise the availability and affordability of staple foods for the population.

‘SAMUDRAYAAN’: INDIA’S FIRST MANNED DEEP OCEAN MISSION TO BE LAUNCHED BY 2026

India is poised to launch its first manned deep ocean mission, **Samudrayaan**, by the end of 2026. This ambitious initiative aims to explore marine resources at depths of up to 6,000 meters using the indigenously developed submersible **Matsya 6000**.

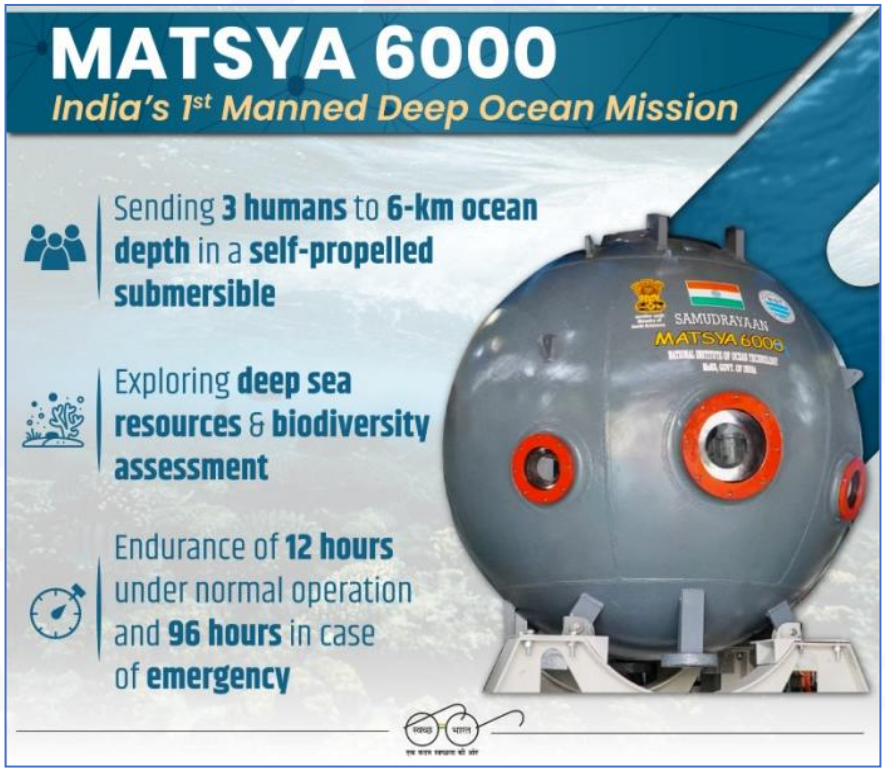
OVERVIEW OF SAMUDRAYAAN MISSION

- **Objective**: To conduct deep-sea exploration for scientific research, resource assessment, and technological advancement.
- **Implementing Agency**: National Institute of Ocean Technology (NIOT), Chennai, under the Ministry of Earth Sciences.
- **Mission Vehicle**: **Matsya 6000**, a 25-tonne, 4th-generation manned submersible designed to carry three scientists to a depth of 6,000 meters.

- **Operational Endurance**: 12 hours under normal conditions, with an emergency endurance of 96 hours.
- **Deployment Vessel**: Research vessel **Sagar Nidhi** will be used for deploying and recovering Matsya 6000.

FEATURES OF MATSYA 6000

- **Construction**: Equipped with a titanium alloy sphere of 80mm thickness and a diameter of 2.1 meters, capable of withstanding pressures up to 600 bar.
- **Indigenous Development**: Entirely developed in India, showcasing the country's capabilities in high-pressure deep-sea engineering.

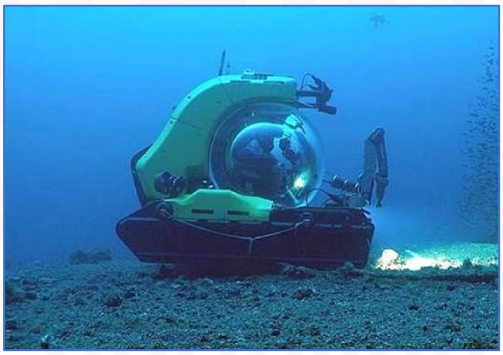


- **Testing Phases**:
  - **Wet Testing**: Successfully completed.
  - **500-meter Depth Trial**: Scheduled for completion by the end of 2025.
  - **Full-scale Deployment**: Planned by the end of 2026.

SIGNIFICANCE OF THE MISSION

- **Scientific Research**: Facilitates the collection of deep-sea samples, crucial for understanding marine biodiversity, geology, and chemistry.
- **Resource Exploration**: Potential to assess both living (marine biodiversity) and non-living resources (minerals like polymetallic nodules, gas hydrates, and cobalt crusts).
- **Technological Advancement**: Demonstrates India's indigenous capabilities in developing deep-sea technologies.
- **Strategic Presence**: Positions India among a select group of nations (USA, Russia, France, Japan, and China) with manned deep-sea exploration capabilities.
- **Economic Potential**: Estimates suggest that the mission could unlock resources worth approximately $110 billion, contributing significantly to India's economy.

DEEP OCEAN MISSION (DOM)



- **Launch Year**: 2021
- **Budget**: ₹4,077 crore over five years.
- **Components**:
    - Development of manned submersible (Samudrayaan).
    - Exploration and conservation of deep-sea biodiversity.
    - Development of deep-sea technologies.
    - Mapping of the seafloor and ocean resources.
    - Development of ocean climate change advisory services.
    - Establishment of an advanced marine station for ocean biology.

- **Alignment with Global Goals**: Supports India's Blue Economy initiatives and aligns with Sustainable Development Goal 14 (Life Below Water).

The mission is being spearheaded by the **National Institute of Ocean Technology (NIOT) and comprises six components:**

- Manned Submersible Development (Samudrayaan).
- Deep-sea Biodiversity Exploration
- Mining Polymetallic Nodules
- Ocean Climate Advisory Services
- Marine Station for Ocean Biology to promote research
- Advanced Ocean Observation Systems using underwater sensors and AI.

STRATEGIC AND ECONOMIC IMPLICATIONS

- **Resource Security**: Exploration of polymetallic nodules, rich in manganese, nickel, cobalt, and copper, essential for electronics and renewable energy sectors.
- **Energy Security**: Investigation of gas hydrates and cobalt crusts could lead to new energy sources.
- **Maritime Sovereignty**: Enhances India's capabilities to explore and utilize resources within its Exclusive Economic Zone (EEZ).
- **Technological Leadership**: Positions India as a leader in deep-sea technology development and exploration.

CONCLUSION

The Samudrayaan mission represents a significant leap in India's scientific and technological endeavors, promising advancements in marine research, resource exploration, and strategic capabilities. By venturing into the depths of the ocean, India not only aims to unlock vast economic potential but also to assert its position as a global leader in deep-sea exploration.

INDIA'S E-WASTE LANDSCAPE

News: India's e-waste surged by over 150% in six years, prompting experts like to advocate for a stable EPR floor price to formalize recycling and curb environmental and economic losses.

WHAT IS E-WASTE?

E-waste encompasses discarded electrical and electronic equipment (EEE) such as computers, televisions, mobile phones, refrigerators, and other devices.

These items often contain hazardous substances like lead, mercury, and cadmium, posing significant health and environmental risks if not properly managed.

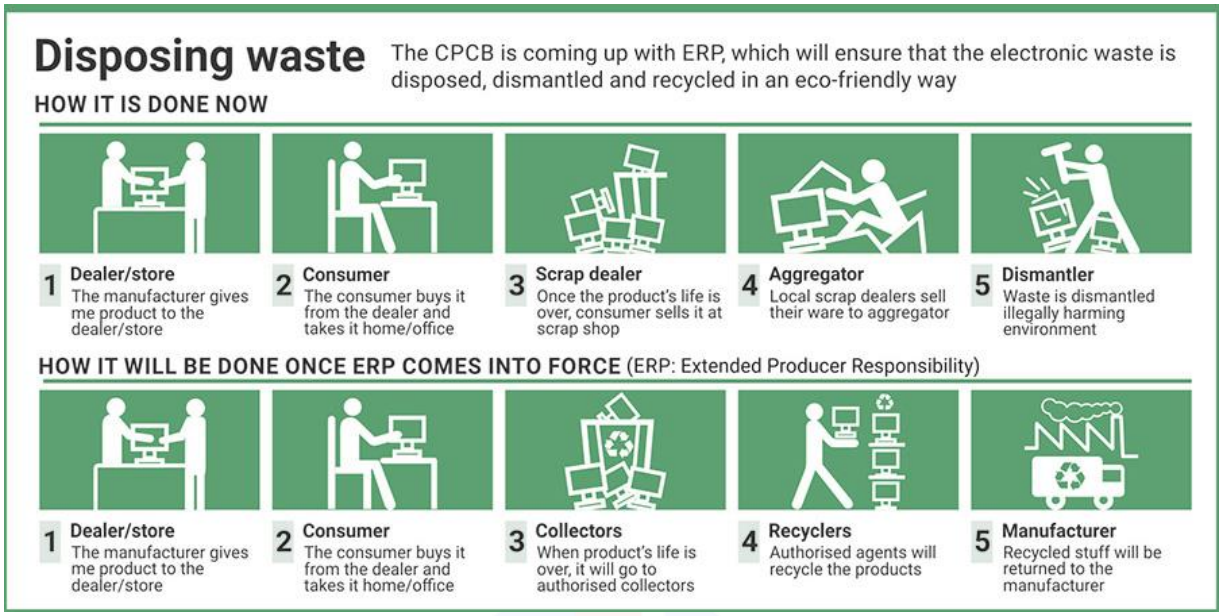
CURRENT STATUS OF E-WASTE IN INDIA

- **Generation**: India generated approximately **4.1 million tonnes** of e-waste in 2023, marking a substantial increase from 1.01 million tonnes in 2019-20.
- **Growth Rate**: This represents a **72.54% increase** over five years, highlighting the rapid escalation of e-waste generation.

- **Recycling**: Only **43%** of the e-waste generated is formally recycled, indicating a significant gap in effective waste management.
- **Informal Sector**: Approximately **95%** of e-waste is handled by the informal sector, often lacking proper safety measures and environmental safeguards.

INDIA'S GLOBAL POSITION IN E-WASTE GENERATION

- **Ranking**: India is the **third-largest** e-waste generator globally, following China and the United States.
- **Global Share**: India contributes about **6.5%** of the world's total e-waste.
- **Per Capita Generation**: The per capita e-waste generation in India is approximately **3 kg**, which is lower than the global average of **7.8 kg**.



KEY INITIATIVES FOR E-WASTE MANAGEMENT IN INDIA

- **E-Waste (Management) Rules, 2022**: Implemented to streamline e-waste management through Extended Producer Responsibility (EPR), mandating producers to ensure environmentally sound recycling of e-waste.
- **Central Pollution Control Board (CPCB) EPR Portal**: A centralized platform for registration and monitoring of producers, recyclers, and refurbishers to ensure compliance with e-waste regulations.
- **Awareness Campaigns**: Initiatives to educate the public about the hazards of improper e-waste disposal and promote responsible recycling practices.
- **Infrastructure Development**: Efforts to establish formal recycling facilities and collection centers to manage e-waste effectively.

E-WASTE (MANAGEMENT) RULES, 2022: KEY FEATURES

- **Extended Producer Responsibility (EPR)**: Producers are obligated to collect and recycle a specified percentage of e-waste generated from their products.

- **Coverage**: The rules apply to manufacturers, producers, refurbishes, dismantlers, and recyclers involved in the lifecycle of electrical and electronic equipment.
- **Recycling Targets**: Producers must achieve a minimum of **20%** e-waste collection based on their sales from the previous two years.
- **Environmental Compensation**: Non-compliance with the rules can result in environmental compensation charges, serving as a deterrent against violations.
- **Inclusion of Solar Waste**: Solar photovoltaic modules and panels are included under the rules, with storage mandated until 2034-35, although no immediate recycling targets are set.

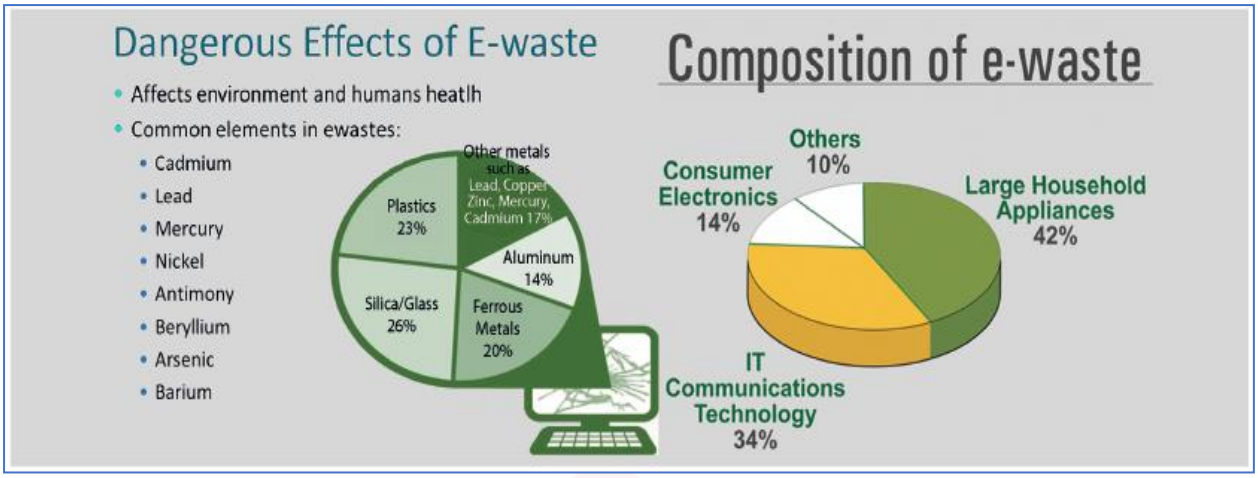
E-Waste Component	Process Used	Potential Environmental Hazard
Cathode ray tubes (used in TVs, computer monitors, ATMs, video cameras, and more)	Breaking and removal of yoke, then dumping	Lead, barium, and other heavy metals leaching into the ground water and release of toxic phosphor
Printed circuit board (a thin plate on which chips and other electronic components are placed)	De-soldering and removal of computer chips, open burning and acid baths to remove metals after chips are removed	Air emissions and discharge into rivers of glass dust, tin, lead, brominated dioxin, beryllium cadmium, and mercury
Chips and other gold-plated components	Chemical stripping using nitric and hydrochloric acid and burning of chips	PAHs, heavy metals, brominated flame retardants discharged directly into rivers acidifying fish and flora. Tin and lead contamination of surface and groundwater. Air emissions of brominated dioxins, heavy metals, and PAHs

Plastics from printers, keyboards, monitors, etc.	Shredding and low temp melting to be reused	Emissions of brominated dioxins, heavy metals, and hydrocarbons
Computer wires	Open burning and stripping to remove copper	PAHs released into air, water, and soil

CHALLENGES IN E-WASTE COLLECTION

- **Informal Sector Dominance**: A significant portion of e-waste is managed by the informal sector, which often lacks the necessary infrastructure and safety protocols, leading to environmental and health hazards.
- **Lack of Consumer Awareness**: Many consumers are unaware of proper e-waste disposal methods, resulting in low participation in formal recycling programs.
- **Insufficient Infrastructure**: There is a scarcity of authorized e-waste collection centers and recycling facilities, hindering effective waste management.

- **Regulatory Enforcement**: Challenges in monitoring and enforcing compliance with e-waste regulations persist, especially among small and medium enterprises.
- **Economic Constraints**: The cost of establishing and maintaining formal recycling infrastructure is high, deterring investment in the sector.



CONCLUSION

India's escalating e-waste problem necessitates a multifaceted approach involving stringent regulatory enforcement, infrastructure development, public awareness, and integration of the informal sector into the formal economy.

Strengthening the EPR framework and ensuring compliance through effective monitoring can significantly enhance e-waste management, mitigating environmental and health risks while tapping into the economic potential of recycled materials.

BIOE3 POLICY

News: India plans to Study sustainability of Human Life in Space under BioE3 Policy.

WHAT IS BIOE3 POLICY?

- An initiative by the Indian government aimed at **leveraging biotechnology** to foster the growth of **economy, environment, and employment opportunities.**
- **Launch Date**: August 24, 2024
- **Implementing Body**: Department of Biotechnology (DBT), Ministry of Science & Technology
- **Vision**: To develop a $300 billion bioeconomy by 2030, up from $130 billion in 2024.

KEY OBJECTIVES OF BIOE3 POLICY

ECONOMIC DEVELOPMENT

- Foster a **$300 billion bioeconomy by 2030** (from $130 billion in 2024).
- Encourage **bio-based industries** (biopharma, bio-agriculture, biofuels) to boost GDP.

ENVIRONMENTAL SUSTAINABILITY

- Support India's **net-zero carbon emissions** goal by 2070.
- Promote **bio-based alternatives** to reduce dependency on petrochemicals and minimize ecological damage.

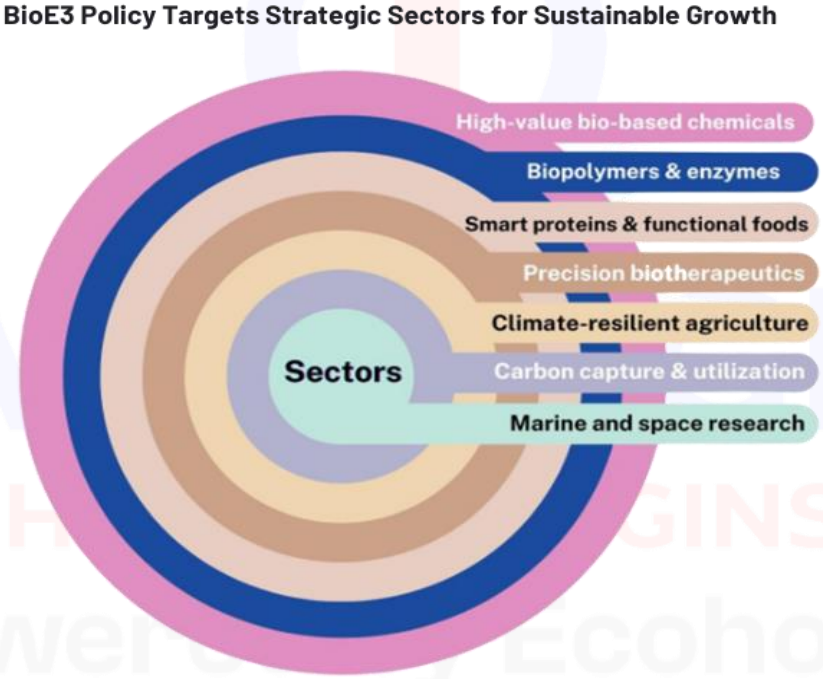
EMPLOYMENT GENERATION

- Create **millions of skilled jobs**, especially in tier-II and tier-III cities through biotechnology hubs and rural bio-entrepreneurship.
- Develop a **biotech-skilled workforce**.

SELF-RELIANCE & GLOBAL LEADERSHIP

- Establish India as a **global biomanufacturing leader**.
- Reduce dependence on imports for bio-industrial inputs and healthcare products.

The policy's scope is broad and ambitious, encompassing several strategic sectors:



STRATEGIC FOCUS AREAS

The policy lays emphasis on **six futuristic** and high-potential domains:

SMART PROTEIN AND FUNCTIONAL FOODS

- Promote plant-based and cultivated meat alternatives.
- Develop protein fermentation and microbial food technologies.

PRECISION BIOTHERAPEUTICS

- Advance gene editing, cell therapy, and precision medicine.
- Enable personalized healthcare solutions.

HIGH-VALUE BIO-CHEMICALS

- Produce bio-based polymers, enzymes, and green chemicals for industrial applications.

CLIMATE-RESILIENT AGRICULTURE

- Innovate in drought-resistant and pest-resistant crops.
- Enhance sustainable agricultural inputs like biofertilizers and biopesticides.

CARBON CAPTURE, STORAGE & UTILIZATION (CCUS)

- Utilize biological routes (e.g., algae, microbes) for **carbon sequestration**.
- Develop tech for converting CO_2 into value-added products.

MARINE AND SPACE BIOTECHNOLOGY

- Harness oceanic and extraterrestrial environments for biotechnology solutions.

IMPLEMENTATION STRATEGY

INSTITUTIONAL INFRASTRUCTURE

- Set up **Biomanufacturing Hubs**, **Biofoundries**, and **Bio-AI Hubs** for advanced research and production.

- Establish **Centre of Excellence** and **Technology Transfer Platforms**.
- **Biofoundry** – Converting academic research into commercial products.
- **BioE3 Council** – To oversee policy implementation.
- **BioE3 Fund** – To support R&D and biotechnology entrepreneurship.
- **Online BioE3 Portal –** To facilitate knowledge distribution and stakeholder coordination

REGULATORY REFORMS

- Simplify approval and certification mechanisms.
- Harmonize biosafety and ethical norms with global standards.

PUBLIC-PRIVATE PARTNERSHIPS (PPP)

- Facilitate industry-academia-government collaboration for innovation and scalability.

INTERNATIONAL COOPERATION

- Partner with global biotechnology leaders for R&D, knowledge sharing, and market access.

WORKFORCE & CAPACITY BUILDING

- Launch skill development programs in biotech manufacturing and services.
- Encourage STEM education in schools and higher education.

IMPLICATIONS OF BIOE3 POLICY

POSITIVE IMPACTS

- **Economic Boost**: Expansion of bioeconomy will add significantly to GDP and attract FDI.
- **Environmental Benefits**: Supports green energy, sustainable agriculture, and reduced carbon footprint.
- **Employment**: Generates skilled and semi-skilled employment opportunities in rural and urban India.
- **Scientific Innovation**: Positions India at the forefront of biotech R&D, increasing patent and startup activity.
- **Rural Development**: Encourages bio-enterprises in agri-biotech, benefiting farmers and rural entrepreneurs.

POTENTIAL CHALLENGES

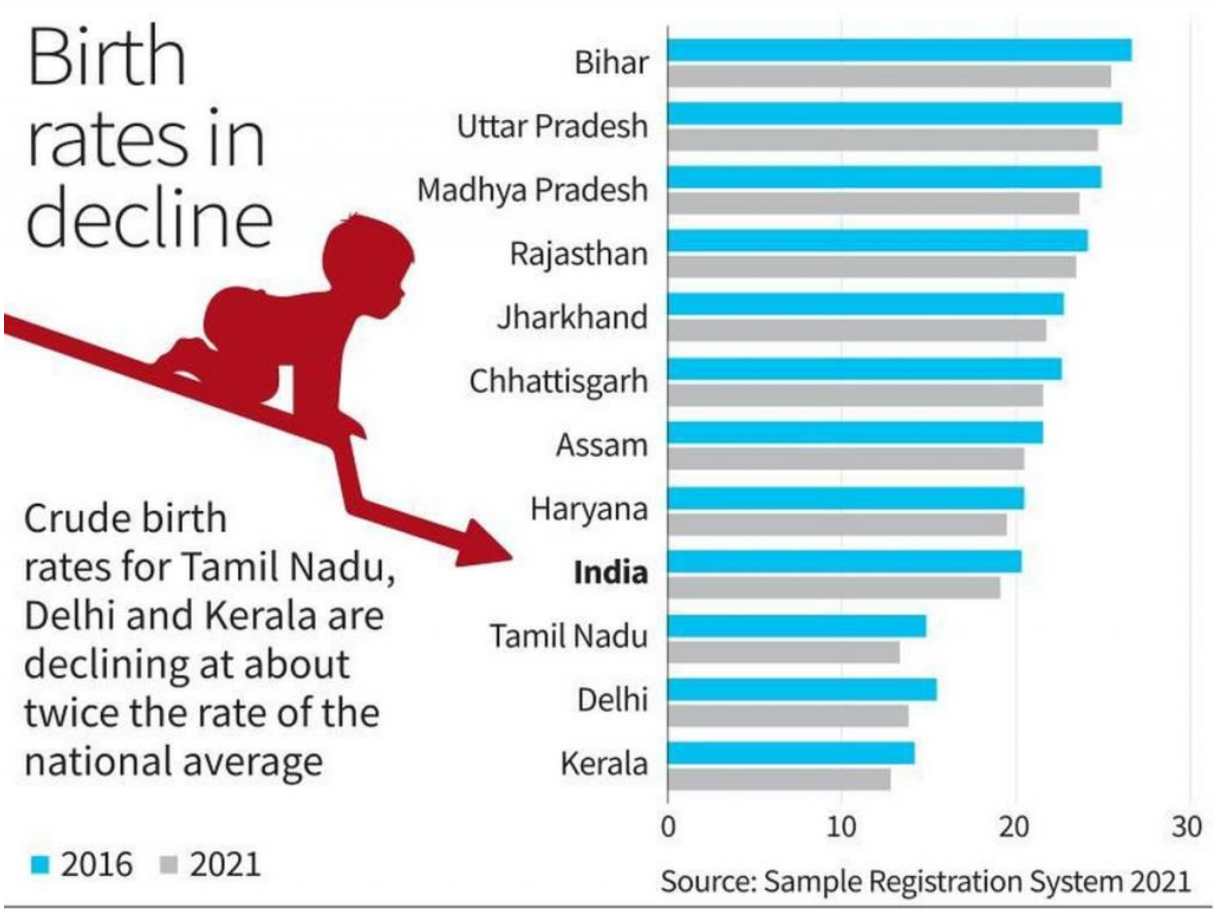
- High **initial investment** and R&D costs.
- Need for **skilled human capital** and training.
- Regulatory **compliance** and biosafety monitoring.
- Managing **ethical and social concerns** (esp. with synthetic biology, gene editing).

BIRTH RATES IN DELHI, KERALA, AND T.N. DECLINING AT TWICE THE RATE OF NATIONAL AVERAGE

News: The annual crude birth rates for Tamil Nadu, Delhi and Kerala **are declining at twice the rate of the national average.**

ABOUT

- The data from the Sample Registration System (SRS) Statistical Report 2021, was released by the Registrar General of India.
- The SRS is the largest demographic survey in the country, meant to provide annual estimates on fertility and mortality indicators such as birth rates, death rates, etc.
- The crude birth rate (CBR) is a demographic measure that indicates the number of live births per 1,000 people in a population during a specific time period, usually a year.



MAJOR FINDINGS OF THE SRS STATISTICAL REPORT 2021

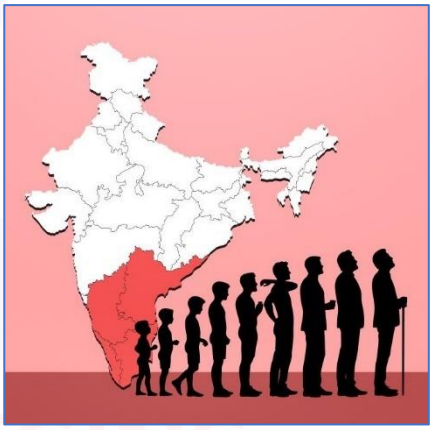
CRUDE BIRTH RATE (CBR) TRENDS

- **National Level**: The Crude Birth Rate (CBR) in India for 2021 stands at **19.3 births per 1,000 population**, exhibiting a consistent decline over the years.
- **Annual Decline Rate (2016–2021)**: The national CBR has been declining at an average rate of **1.12% per year** during this period.

STATES WITH ACCELERATED DECLINE IN BIRTH RATES

Certain states have experienced a more rapid decline in birth rates compared to the national average:

- **Tamil Nadu**: CBR declined by **2.35% annually**.
- **Delhi**: CBR declined by **2.23% annually**.
- **Kerala**: CBR declined by **2.05% annually**.



These rates are nearly double the national average decline.

TOTAL FERTILITY RATE (TFR) INSIGHTS

- **National TFR**: Remained constant at **2.0** in 2021, which is below the replacement level of 2.1.
- **State-wise TFR**:
  - **Tamil Nadu**: TFR of **1.4**, among the lowest in India.
  - **Delhi**: TFR of **1.57**.
  - **Kerala**: TFR of **1.8**.

MORTALITY INDICATORS

- **Infant Mortality Rate (IMR)**: Declined from **39 per 1,000 live births in 2014** to **27 in 2021**.
- **Neonatal Mortality Rate (NMR)**: Reduced from **26 per 1,000 live births in 2014** to **19 in 2021**.
- **Under-Five Mortality Rate (U5MR)**: Dropped from **45 per 1,000 live births in 2014** to **31 in 2021**.

SEX RATIO AT BIRTH

- Improved from **899 females per 1,000 males in 2014** to **913 in 2021**, indicating progress towards gender balance at birth.

CONCERNS ARISING FROM THE DECLINING BIRTH RATES

AGING POPULATION

- With declining birth rates, especially in states like Tamil Nadu, Kerala, and Delhi, there's a potential for an increased proportion of the elderly population, leading to higher dependency ratios and increased pressure on healthcare and social security systems.

LABOR FORCE IMPLICATIONS

- A shrinking young population may result in a reduced labor force, impacting economic productivity and growth.

WHILE REGIONAL DISPARITIES

- some states experience rapid declines in birth rates, others like Bihar and Uttar Pradesh have higher fertility rates, leading to uneven population growth and potential resource allocation challenges.

URBAN-RURAL DIVIDE

- Urban areas tend to have lower fertility rates compared to rural regions, which may lead to demographic imbalances and strain on urban infrastructure due to migration.

WAY FORWARD

POLICY INTERVENTIONS

- Develop comprehensive population policies that address both high and low fertility regions, ensuring balanced demographic growth.

HEALTHCARE INFRASTRUCTURE

- Strengthen healthcare systems, especially geriatric care, to cater to the aging population.

ECONOMIC PLANNING

- Implement strategies to adapt to changing labor force dynamics, such as automation and skill development programs.

AWARENESS CAMPAIGNS

- Promote awareness about the implications of declining birth rates and encourage balanced family planning practices.

WHAT IS REGISTRAR GENERAL OF INDIA?

The **Registrar General and Census Commissioner of India (RGCCI)** is a pivotal authority under the **Ministry of Home Affairs**, responsible for collecting, analyzing, and disseminating demographic data crucial for policy-making, governance, and planning.

ESTABLISHMENT AND ORGANIZATIONAL STRUCTURE

- **Established**: 1949 by the Government of India.
- **Headquarters**: New Delhi
- **Current Head**: As of the latest available information, the position is held by a civil servant of the rank of Additional Secretary.
- **Organizational Hierarchy**:
  - The RGCCI operates under the **Ministry of Home Affairs**.
  - Each state and union territory has a **Directorate of Census Operations** to oversee regional activities.

KEY FUNCTIONS AND RESPONSIBILITIES

CENSUS OPERATIONS:

- **Decennial Census**: Conducts the **Census of India** every 10 years, as mandated by the **Census Act of 1948**. The census collects comprehensive data on population, housing, literacy, occupation, and more.

- **Linguistic Survey of India**: Carries out surveys to document the linguistic diversity of the country.

CIVIL REGISTRATION SYSTEM (CRS):

- Oversees the **Registration of Births and Deaths Act, 1969**, ensuring the compulsory registration of births and deaths across India.

SAMPLE REGISTRATION SYSTEM (SRS):

- Implements the SRS to provide reliable annual estimates of birth rate, death rate, infant mortality rate, and other fertility and mortality indicators.

NATIONAL POPULATION REGISTER (NPR):

- Maintains the NPR, a database of usual residents of the country, under the provisions of the **Citizenship Act, 1955**, and the **Citizenship (Registration of Citizens and Issue of National Identity Cards) Rules, 2003**.

HISTORICAL CONTEXT

- **Pre-Independence**:
  - The first synchronous census in India was conducted in **1881** under British rule.
  - Prior to 1949, census operations were managed on an ad-hoc basis for each census.

- **Post-Independence**:
  - In **1949**, the Government of India established the office of the Registrar General and ex-Officio Census Commissioner to

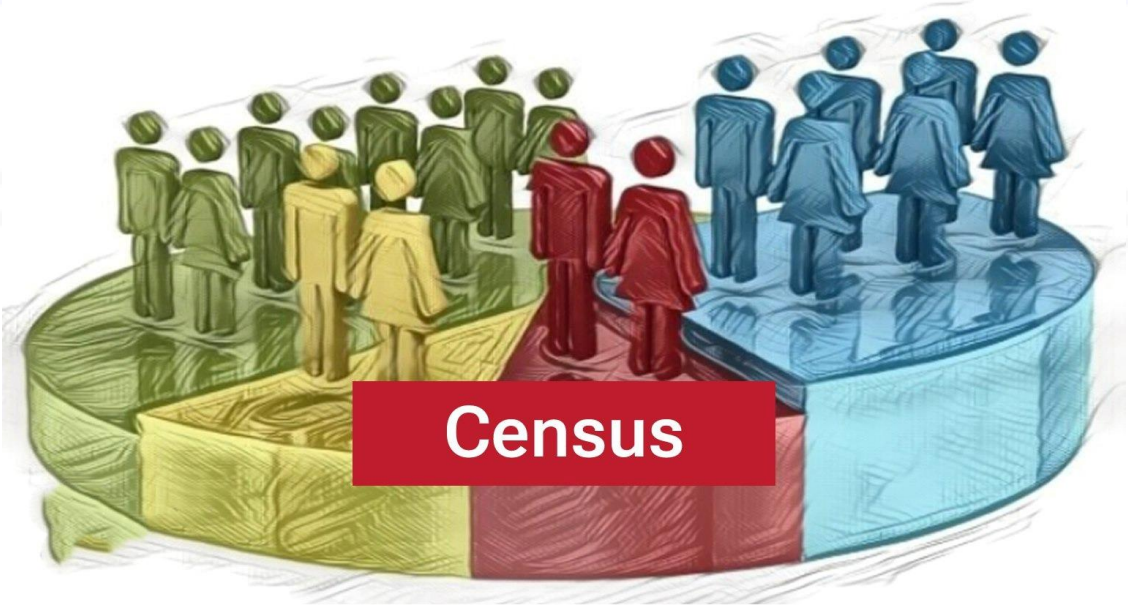
develop a systematic approach to demographic data collection.

SIGNIFICANCE IN GOVERNANCE AND POLICY-MAKING

- **Data-Driven Planning**: The data collected by the RGCCI is instrumental in formulating policies related to health, education, employment, and infrastructure.
- **Resource Allocation**: Accurate demographic data ensures equitable distribution of resources and services across regions.
- **Monitoring and Evaluation**: Vital statistics help in assessing the effectiveness of government programs and initiatives.

CHALLENGES AND RECENT DEVELOPMENTS

- **Delayed Census 2021**: The decennial census scheduled for 2021 was postponed due to the COVID-19 pandemic and other administrative reasons.
- **Data Accuracy**: Ensuring complete and accurate registration of births and deaths remains a challenge, with the RGI aiming for 100% registration.



RIGHT TO DIGITAL ACCESS

News: The Supreme Court has held that the right to digital access is part of the right to life and liberty under Article 21, mandating inclusive revisions in digital KYC norms.

The Supreme Court of India's landmark judgment in Pragya Prasun & Amar Jain v. Union of India (2025) has significantly advanced the discourse on digital rights, recognizing digital access as a fundamental right under Article 21 of the Constitution. This decision underscores the necessity of inclusive digital infrastructure, especially for persons with disabilities (PwDs), and sets a precedent for future policies and legal interpretations.

WHAT IS RIGHT TO DIGITAL ACCESS?

The right to digital access refers to the guaranteed ability of every citizen, including the disabled and marginalized, to access and benefit from digital public and financial infrastructure.

CONSTITUTIONAL INTERPRETATION: DIGITAL ACCESS UNDER ARTICLE 21

- **Article 21** of the Indian Constitution guarantees the right to life and personal liberty.
- **The Supreme Court,** in this judgment, expanded the scope of Article 21 to include the right to digital access, emphasizing that in the

contemporary era, access to essential services, education, healthcare, and economic opportunities is increasingly mediated through digital platforms.

- Therefore, ensuring digital accessibility is intrinsic to the right to live with dignity and autonomy.

ISSUES SURROUNDING THE RIGHT TO DIGITAL ACCESS

ACCESSIBILITY CHALLENGES FOR PWDS

The petitioners highlighted that existing digital Know Your Customer (KYC) processes, which often require facial recognition or eye-blinking verification, are not accessible to individuals with visual impairments or facial disfigurements, such as acid attack survivors. This lack of accessibility effectively excludes them from essential services.

DIGITAL DIVIDE

The Court acknowledged that the digital divide disproportionately affects marginalized communities, including rural populations, economically weaker sections, and linguistic minorities, leading to systemic exclusion from digital services.

STATE OBLIGATIONS

The judgment emphasized the State's duty to ensure that digital infrastructure, government portals, online learning platforms, and financial technologies are universally accessible, aligning with Articles 14 (equality before the law), 15 (prohibition of discrimination), and 38 (promotion of welfare of the people) of the Constitution.

- **Exclusion in KYC Systems:** Visual and motor-based tasks like blinking, selfie capture, and OTP validation exclude persons with visual impairments or facial disfigurement.
- **Non-compliance with ICT Accessibility Standards:** Most KYC apps lack screen readers, audio prompts, or alternate identity verification modes.
- **Denial of Basic Services:** Lack of accessible KYC leads to exclusion from banking, telecom, pension, and welfare schemes for persons with disabilities (PwDs).
- **Discriminatory Design:** The absence of universal design principles breaches Section 42 of the Rights of Persons with Disabilities Act, 2016.
- **Widening Digital Divide:** Barriers affect not only PwDs but also rural citizens, senior citizens, and linguistic minorities.

SUPREME COURT JUDGMENT: PRAGYA PRASUN & AMAR JAIN V. UNION OF INDIA (2025)

BACKGROUND

The case was initiated by petitioners who faced barriers in accessing digital services due to disabilities. They contended that the existing digital KYC processes violated their fundamental rights under the Constitution and the Rights of Persons with Disabilities Act, 2016 (RPwD Act).

KEY FINDINGS

- The Court recognized digital access as an intrinsic component of the right to life and liberty under Article 21.
- It held that inaccessible digital services violate the principles of equality and non-discrimination enshrined in Articles 14 and 15.
- The judgment emphasized the State's obligation to implement reasonable accommodations as mandated by the RPwD Act and the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD).

DIRECTIONS ISSUED

The Supreme Court issued several directives to ensure digital inclusivity:

- Appointment of Nodal Officers in each department to oversee compliance with digital accessibility standards.
- Mandatory adherence of all government websites to Section 46 of the RPwD Act, requiring accessibility features.
- Establishment of mechanisms for human review of rejected KYC applications due to accessibility challenges.
- Creation of dedicated helplines offering assistance to PwDs in completing digital processes.

SIGNIFICANCE OF THE JUDGMENT

LEGAL PRECEDENT

- This ruling sets a precedent by formally recognizing digital access as a fundamental right, thereby influencing future legislation and judicial decisions related to digital inclusivity.

POLICY IMPLICATIONS

- The judgment mandates the integration of accessibility features into digital services, prompting a reevaluation of existing digital infrastructures and policies to accommodate the needs of PwDs and other marginalized groups.

EMPOWERMENT OF MARGINALIZED COMMUNITIES

- By ensuring accessible digital services, the ruling empowers individuals with disabilities, rural populations, and economically weaker sections, facilitating their participation in the digital economy and society.

RELEVANT SUPREME COURT JUDGMENTS

ANURADHA BHASIN V. UNION OF INDIA (2020)

- The Court held that access to the internet is integral to the freedom of speech and expression under Article 19(1)(a), emphasizing the necessity of internet access for the exercise of fundamental rights.

SHREYA SINGHAL V. UNION OF INDIA (2015)

- This judgment struck down Section 66A of the Information Technology Act, 2000, for being unconstitutional, reinforcing the importance of free speech in the digital realm.

RAJIVE RATURI V. UNION OF INDIA (2017)

- The Court recognized the right to accessibility for PwDs as integral to the right to life and dignity under Article 21, laying the groundwork for subsequent rulings on digital accessibility.

B.R. GAVAI SWORN IN AS CHIEF JUSTICE OF INDIA

News: Justice Bhushan Ramkrishna Gavai was sworn in by President Droupadi Murmu as the 52nd Chief Justice of India.

CONSTITUTIONAL PROVISIONS

- The Constitution of India does not mention any procedure for appointing the CJI.
    - **Article 124 (1)** of the Constitution merely says, "There shall be a Supreme Court of India consisting of a Chief Justice of India."
- **Clause (2) of Article 124** of the Constitution says that every Judge of the Supreme Court shall be appointed by the President.
    - Thus, in the absence of a constitutional provision, the procedure to appoint CJI relies on convention.

WHAT IS THE CONVENTION?

- **The outgoing CJI recommends his successor** a practice, which is strictly based on seniority.

- Seniority, however, is not defined by age, but by the number of years a judge has been serving in the top court of the country.

ELIGIBILITY

- Apart from being an Indian citizen, the person must;
    - Have been for at least **five years a Judge of a High Court** or of two or more such Courts in succession or,
    - Have been for **at least ten years an advocate of a High Court** or of two or more such Courts in succession, or
    - Be, in the opinion of the President, a **distinguished jurist.**

TENURE AND RETIREMENT

- The Constitution **does not fix a tenure** for the Chief Justice.
- The **retirement age** for Supreme Court judges, including the CJI, is **65 years.**

REMOVAL OF CJI

- The constitution provides that a judge can be removed only **by an order of the president,** based on a motion passed by both houses of parliament.
- The procedure for removal of judges is elaborated in the **Judges Inquiry Act, 1968.** The Act sets out the following steps for removal from office:

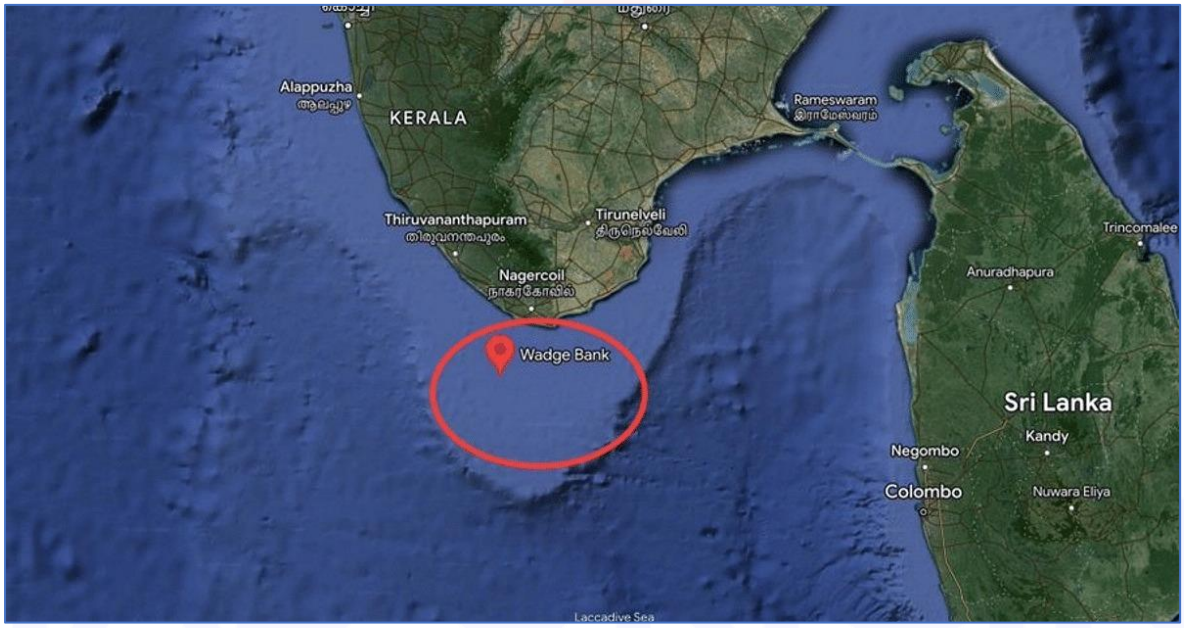
IMPEACHMENT PROCEEDINGS

- A removal motion signed by 100 members (in case of Lok Sabha) or 50 members (in case of Rajya Sabha) is to be given to the Speaker/Chairman.
- If the motion is admitted, then a three-member committee to investigate into the charges is constituted.

- If the committee finds the judge to be guilty of the charges (misbehaviour or incapacity), the House in which the motion was introduced, can take up the consideration of the motion.
- Special majority: Majority of total membership of the House & majority of not less than two thirds' members present and voting.
- Once, the House in which removal motion was introduced passes it with special majority, it goes to the second House which also has to pass it with it a special majority.
- After the motion is passed, an address is presented to the President for removal of the judge. The President then passes an order removing the judge.

WADGE BANK

News: The **Union Ministry of Petroleum and Natural Gas** has invited bids for hydrocarbon exploration near **Wadge Bank,** south of **Cape Comorin** in Tamil Nadu, under the **Hydrocarbon Exploration and Licensing Policy (HELP).** This has sparked strong opposition from local fishermen and environmental groups, who fear the project will harm marine biodiversity and fishing livelihoods in a highly productive and ecologically sensitive zone.



WHAT IS WADGE BANK?

- **Wadge Bank** is a shallow, ecologically rich part of the ocean floor in the Indian Ocean.
- It is known for its **abundant fishery resources** and **high marine productivity**.
- **Location**: South of Cape Comorin (Kanniyakumari), extending into the Indian Ocean.
- Wadge Bank is a **continental shelf** area that creates **ideal conditions for fish breeding** due to upwelling, nutrient-rich waters, and suitable temperatures.

- It supports the fishing communities of multiple Tamil Nadu districts—**Kanniyakumari, Tirunelveli, Thoothukudi, Ramanathapuram**—and parts of **Kerala**.
- **Strategic Value**: It also acts as a **natural barrier**, absorbing shockwaves from oceanic disturbances like tsunamis and cyclones, reducing disaster vulnerability for the Tamil Nadu coastline.

WHAT ARE HYDROCARBONS?

- Hydrocarbons are organic compounds made up of hydrogen and carbon atoms.
- They are the fundamental constituents of fossil fuels, including coal, natural gas, and petroleum.
- Hydrocarbon exploration refers to the process of searching for and identifying potential sources of hydrocarbons, such as oil and natural gas, beneath the Earth's surface.

HYDROCARBON EXPLORATION AND LICENSING POLICY (HELP)

LAUNCHED IN 2016:

- Introduced by the Government of India to replace the earlier **New Exploration Licensing Policy (NELP)**.

UNIFORM LICENSING:

- A single license for the exploration and production of all types of hydrocarbons — oil, gas, coal bed methane (CBM), shale oil/gas, etc.
- Encourages integrated development of all hydrocarbon resources.

OPEN ACREAGE LICENSING POLICY (OALP):

- Companies can select exploration blocks of their choice without waiting for government bidding rounds.
- Promotes investor-friendly and continuous bidding.

REVENUE SHARING MODEL:

- Shift from cost recovery to revenue sharing between the government and contractor.
- **Simplifies accounting and reduces disputes and delays.**

MARKETING AND PRICING FREEDOM:

- Freedom to market and price crude oil and natural gas in the domestic market.
- Aimed at making the sector more competitive and attractive to investors.

REDUCED ROYALTY RATES:

- Incentives through lower royalty rates for offshore and deep-water discoveries.
- Promotes high-risk and high-investment exploration.

EASE OF DOING BUSINESS:

- Simplified procedures, faster approvals, and reduced regulatory burden.

- Emphasis on transparency and ease for private and foreign companies.

FOCUS ON UNEXPLORED AREAS:

- Encourages exploration in unexplored and remote areas, including frontier basins.

ENVIRONMENTAL AND SAFETY NORMS:

- Strict adherence to environmental protection and safety guidelines in exploration and production.

SUPPORT TO ENERGY SECURITY:

- Aims to increase domestic production and reduce import dependency.
- Aligns with India's vision of energy self-sufficiency.

KHARIF SOWING SURGES IN 2025

News: The **Ministry of Agriculture and Farmers Welfare** reported a significant increase in the sowing of **paddy, pulses, coarse grains, oilseeds, and vegetables (onion, potato, tomato)** during the ongoing **Kharif season (2024–25)**.

KEY FINDINGS FROM THE MINISTRY'S UPDATE:

Increase in Kharif Sowing (as of May 2025):

Crop Type	2023–24 Area	2024–25 Area	Net Increase
Paddy	28.57 lakh ha	32.02 lakh ha	+3.44 lakh ha
Pulses	18.47 lakh ha	20.67 lakh ha	+2.20 lakh ha
? Moong	-	-	+1.70 lakh ha
? Urad	-	-	+0.50 lakh ha
Onion	9.76 lakh ha	12.58 lakh ha	+2.82 lakh ha
Potato	-	-	+0.47 lakh ha

Tomato sowing is ongoing smoothly along with onion.

PADDY (RICE) CULTIVATION:

- **Season**: Grown predominantly in **Kharif season** (June–October), some regions grow in Rabi.
- **Top producing states**: West Bengal, UP, Punjab, Andhra Pradesh, Tamil Nadu.
- **Water-intensive crop**: Requires flooded fields; dependent on monsoons or irrigation.
- **Government Support**:
    - MSP (Minimum Support Price)
    - Procurement through FCI

- PMFBY (Crop insurance)
- NFSM-Rice under National Food Security Mission

PULSES CULTIVATION:

- India is the **largest producer and consumer** of pulses globally.
- **Major Pulses**: Moong (Green gram), Urad (Black gram), Arhar (Pigeon pea), Gram (Chickpea), Lentils.
- **Sown in both Kharif and Rabi seasons**.
- **Top producers**: Madhya Pradesh, Maharashtra, Rajasthan, UP, Karnataka.
- **Government Support**:
  - NFSM-Pulses
  - MSP and Price Stabilization Fund
  - Pulse buffer stock to control prices
  - Promotion of climate-resilient pulse varieties

TSARAP CHU CONSERVATION RESERVE

News: The **Himachal Pradesh Government** officially **notified the Tsarap Chu Conservation Reserve** under **Section 36A (1) of the Wildlife (Protection) Act, 1972**. This makes it the **largest conservation reserve** in India and a major biodiversity landmark in the fragile and remote **Spiti.**

TSARAP CHU

- It is located in the **Spiti Valley**, a high-altitude cold desert in **Lahaul and Spiti district** of Himachal Pradesh.
- It lies near the border with **Ladakh**, and is surrounded by **Kibber Wildlife Sanctuary** to the east and **Chandratal Wildlife Sanctuary** to the west.
- It is at the confluence of the **Unam River** and **Charap Nala** and also acts as the **catchment area** of the Charap Nala.
- This area serves as a vital **wildlife corridor**, facilitating the movement of species between the **Kibber** and **Chandratal**
- The reserve is **rich in high-altitude Himalayan biodiversity**, offering critical habitat to several rare and endangered species.

- **Flagship Species**: **Snow Leopard** (*Panthera uncia*), **Tibetan Wolf**, **Bharal (Blue Sheep)**, **Himalayan Ibex**, **Kiang (Tibetan Wild Ass)**, and **Tibetan Argali**
- **Avifauna:** Rare and adapted bird species include the **Rose Finch**, **Tibetan Raven**, and **Yellow-billed Chough**, which indicate the region's ornithological richness.

CONSERVATION RESERVE

- A **Conservation Reserve** is a category of **protected area** in India, created on **government-owned land** that lies **outside existing National Parks and Wildlife Sanctuaries**.
- These areas serve as **ecological corridors or buffer zones**, enabling the **movement of wildlife** between larger protected areas, and are designated to conserve **important habitats, landscapes, and biodiversity**.
- They are legally notified under **Section 36A of the Wildlife (Protection) Act, 1972**.
- They are managed through participatory approaches involving **local communities, Panchayats, and conservation**

stakeholders.

- The **Wildlife (Protection) Act, 1972**, under **Section 36A**, allows states to declare any area (excluding national parks and sanctuaries) as a **conservation reserve** for:
  - Protecting landscapes, habitats, flora and fauna,
  - Maintaining biodiversity and ecological processes,
  - Involving local communities in participatory conservation.
- Tsarap Chu is now **Himachal Pradesh's fifth conservation reserve**, joining: Darlaghat, Naina Devi, Potter Hill and Shilli.

NATIONAL AND GLOBAL CONSERVATION IMPLICATIONS

- India is a **signatory to the Convention on Biological Diversity (CBD)** and is committed to conserving **30% of its land and marine areas by 2030** under the **"30 by 30" target**. Such reserves contribute directly to this goal.
- International organisations like **WWF** and **Snow Leopard Trust** consider the **Himalayas and Trans-Himalayas** as global priority landscapes for conservation.

NATIONAL PARKS

- No rights are allowed.
- No grazing of livestock is permitted

WILDLIFE SANCTUARIES

- Grazing, collecting firewood by local communities especially tribals are allowed.
- A sanctuary can be promoted to National Park but its reverse cannot be done.

CONSERVATION RESERVE

- Declared by state government in any area owned by Government.

- The rights of people living inside a Conservation Reserve are not affected.

COMMUNITY RESERVE

- Declared by state government in any private or community land, not comprised within a National Park, Sanctuary or a conservation reserve.
- The rights of people living inside a community reserve are not affected.

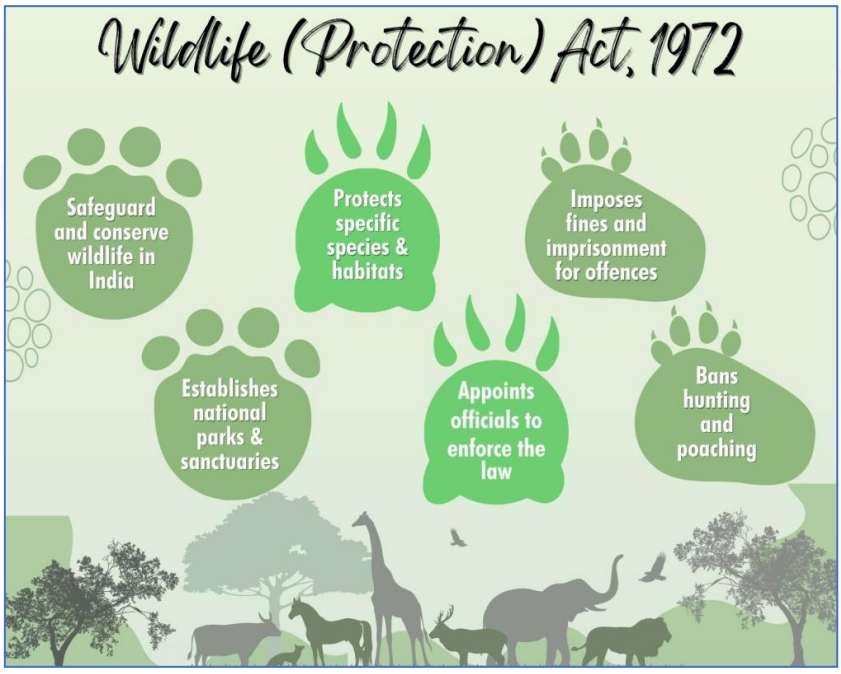
WILDLIFE (PROTECTION) ACT, 1972

OBJECTIVE:

- To **protect wild animals, birds, and plants** and ensure the **ecological and environmental security of India**.

EXTENT:

- Applicable to the **entire country**, including **Jammu & Kashmir** (after the removal of Article 370).



SCHEDULES:

The Act has **six schedules** which provide varying degrees of protection:

- **Schedule I & II (Part II)**: Highest protection; **offences attract severe penalties** (e.g., tiger, elephant).
- **Schedule II (Part I)**: Less protected than Schedule I.
- **Schedule III & IV**: Protected but with **lesser penalties**.
- **Schedule V**: Animals classified as **vermin**; **can be hunted** (e.g., common crow, rats).
- **Schedule VI**: Specifies **endangered plants** (e.g., pitcher plant); **prohibits cultivation and planting**.

PROTECTED AREAS:

The Act provides for the creation of:

- **National Parks**
- **Wildlife Sanctuaries**
- **Conservation Reserves**
- **Community Reserves**
- **Hunting Prohibition**: Hunting of animals listed in Schedules I to IV is **prohibited**, except under specific conditions (e.g., threat to human life, scientific research).

REGULATION OF TRADE:

- **Trade in wildlife and its derivatives** are banned or strictly regulated.

OFFENCES AND PENALTIES:

- **Stringent punishment** including fines and imprisonment for violations.
- Enhanced penalties for offences related to **Schedule I species**.

WILDLIFE CRIME CONTROL BUREAU (WCCB):

- A **statutory body** under the Act.
- Coordinates with law enforcement to control **illegal trade in wildlife**.

THE WILDLIFE (AMENDMENTS:

- The Act has been amended several times (notably in **2002**, **2006**, and **2022**) to make it more effective.

PROTECTION) AMENDMENT ACT, 2022:

- Rationalized the **Schedules**.
- Increased **penalties**.
- Included **CITES provisions** to regulate international trade.
- Provided for the management of **invasive alien species**.

SIGNIFICANCE:

- One of the **most comprehensive wildlife protection laws** in India.
- Crucial for the **conservation of biodiversity** and maintaining ecological balance.

Snow Leopard

- **IUCN: 'Vulnerable'**
- Schedule-I species of the Indian Wildlife (Protection) Act, 1972
- Feature: It is an elusive mountain cats found in:
- Jammu and Kashmir, Ladakh (Hemis NP is known for presence of Snow Leopard), Himachal Pradesh, Uttarakhand and Sikkim and Arunachal Pradesh.

SHIFT IN US POLICY TOWARDS SYRIA

News: US President Donald Trump visited **Saudi Arabia, Qatar, and the UAE**, where he announced the lifting of **46-year-old US sanctions** on Syria. This marked a dramatic policy shift, especially since Syria's new leader, Ahmed al-Sharaa, is a former al-Qaeda affiliate once targeted by the US.

BACKGROUND

- The US imposed sanctions on Syria in **1979** after it was designated a **State Sponsor of Terrorism**, especially for supporting **Palestinian and Lebanese armed groups.**
- These sanctions intensified over the years:
    - **2004:** Added economic and defense restrictions.
    - **2011–2019:** After Syria's civil war began, sanctions became comprehensive, targeting oil, finance, and state-linked individuals (like Assad) under the **Caesar Act.**
- Now, Trump plans to revoke most of these, starting with those under executive orders.

WHY THE US IS CHANGING COURSE ON SYRIA?

CHANGE OF LEADERSHIP JUSTIFIES POLICY SHIFT:

- **The primary reason Trump could justify lifting sanctions is that Bashar al-Assad has been removed.**
- **Since US sanctions were tied to Assad's regime due to human rights abuses, war crimes, and support to terrorist groups the exit of Assad provides a technical and symbolic opening.**
- **Al-Sharaa, who led a coalition that ousted Assad, now heads a** "transitional administration"**.**
- **Though his** past links with al-Qaeda are serious**, Trump has decided to** ignore this history**, focusing instead on realpolitik and "regional ownership" of stability.**

MODERATION & STABILITY IN SYRIA:

- **Al-Sharaa's government is being presented as** more moderate and pragmatic:
- **He has** unified sectarian militias**, integrated them into the national military, and avoided overt ideological posturing.**

- **He is also open to** international cooperation**, including potentially** recognizing Israel **through the Abraham Accords and working to suppress ISIS.**

This makes it easier for the US and allies to engage Syria sanctions have done their job **in pushing out Assad and creating space for a relatively stable government.**

WHAT IS US'S MIDDLE EAST VISION?

SHIFT FROM MILITARY TO ECONOMIC ENGAGEMENT:

- **Trump's approach in the Middle East is less about democracy promotion or military intervention, and more about economic deals.**
- **He emphasized** "regionally-owned" conflict resolution**, signaling US disengagement from ground conflicts like Syria and Iraq.**
- **Instead of promising aid or military presence, he wants:**
  - **Syria to handle its own reconstruction (with help from Gulf states).**
  - **Al-Sharaa to assist in containing ISIS and policing extremist groups.**

MASSIVE TRADE DEALS WITH GULF STATES:

Trump's visit produced USD 1 trillion in combined deals:

- USD 600 billion with Saudi Arabia, including a record USD 142 billion arms deal.
- USD 243.5 billion with Qatar.
- USD 200 billion with the UAE.

In return, the Gulf states are:

- Investing in the US economy.
- Offering Trump personal favors (e.g., Qatar gifting a custom Air Force One jet, real estate deals).

- Engaging with key Trump allies, like Elon Musk, who is helping Saudi Arabia integrate Starlink for digital expansion.

EMERGING MINILATERALISM:

- Trump continues to push for groupings like the I2U2 (India-Israel-UAE-USA) which emphasize economic and technological collaboration rather than military alignment.
- His call for Syria to join the Abraham Accords may be part of a larger effort to reshape regional alliances into more transactional, economically-driven platforms.

WHAT ABOUT ISRAEL?

ISRAEL'S DISCOMFORT:

- Israel, under Prime Minister Netanyahu, opposes lifting sanctions on Syria, viewing it as empowering a potential threat near its border. It also worries about US re-engagement with Turkey and Iran.
- **Turkey** is being allowed back into the **F-35 fighter jet program** (after being removed for buying Russian weapons).
- The US recently approved a **USD 304 million missile deal** with Ankara.

TALKS WITH IRAN:

- Most controversially, Trump said the US and **Iran are close to a new nuclear deal**. Iran appears ready to trade its enriched uranium stockpile in exchange for sanctions relief.
- The **Houthi**s, an Iran-backed militia in Yemen, have also gained leverage. The US halted airstrikes in exchange for reduced attacks on American shipping.
- Israel, however, remains skeptical and has stated it will **defend itself alone** if needed, especially against continued Houthi attacks.

IMPLICATIONS FOR INDIA

OPPORTUNITIES IN CONNECTIVITY AND INVESTMENT:

India can benefit from the renewed **US-Gulf engagement** by participating in projects like:

- **IMEC (India-Middle East-Europe Economic Corridor)** this could boost India's trade, energy access, and regional connectivity.
- Collaborative projects in **defence technology, logistics, and infrastructure**.

REINFORCEMENT OF INDIA-GULF TIES:

- Gulf nations like UAE and Saudi Arabia are becoming more important to India not just as energy suppliers and labour markets, but also as **strategic partners**.
- Trump's push for Gulf diversification aligns well with India's **"Act West" policy**.

CAUTION REQUIRED ON THIRD-PARTY MEDIATION:

- Trump claimed credit for "defusing India-Pakistan tensions" through trade diplomacy a statement that India finds uncomfortable, given its **long-standing opposition to external mediation on Kashmir**.
- Furthermore, Saudi Arabia's occasional offers to mediate between India and Pakistan may become more prominent under this new West Asia dynamic, which India will need to **handle delicately**.

NAVIGATING ETHICAL GREY ZONES:

- Trump's blending of political office with private business could lead to **unpredictable policy shifts**.
- India must be cautious while entering any trilateral or multilateral economic deals where **personal interests might influence American diplomacy**.

BHARGAVASTRA

News: India has successfully tested an indigenous counter-drone system dubbed as 'Bhargavastra'.

WHAT IS 'BHARGAVASTRA'?

- Designed and developed by **Solar Defence and Aerospace Limited (SDAL)**, Bhargavastra uses **minor rockets to detect and neutralize drones** at a range of up to 2.5 km.
- The Bhargavastra system deploys unguided **micro rockets to neutralise swarms of drones with a lethal radius of 20 metres.**
- The system's second layer of defence is the guided micro-missile, which ensures precise and effective targeting. It has the capability to fire 64 micro missiles simultaneously.
- Its radar has a range of **6 to 10 km for locating small aerial threats.**
- The system can also be integrated with the existing network-centric warfare infrastructure. It allows integration of soft kill options like jamming and spoofing.

WORLD FOOD PRIZE 2025

News: Brazilian microbiologist **Mariangela Hungria**, has been named the 2025 World Food Prize Laureate.

ABOUT

- Hungria developed seed and soil treatments using beneficial bacteria like **rhizobia and Azospirillum brasilense.**
- Her innovations help soybeans fix nitrogen naturally and enhance root growth in crops like corn, improving nutrient and water uptake.

WORLD FOOD PRIZE

- The World Food Prize is the **foremost international award** recognizing the accomplishments of individuals who have **advanced human development by improving the quality, quantity, or availability of food** in the world.
- The award was **established in 1986** by Nobel Peace Prize laureate **Dr. Norman E. Borlaug.**
    - It is often referred to as the **Nobel Prize for Food and Agriculture.**
- **The $500,000 award** is formally presented at the **Laureate Award Ceremony** in mid-October, on or around World Food Day.

PLASTIC WASTE IN HIMALAYAS

News: According to a report more than 84% of the plastic waste collected in Himalayan region is posing serious environmental and systemic challenges.

According to data gathered from the Himalayan Cleanup (THC) 2024**, conducted across nine Himalayan states, over** 1.2 lakh pieces **of waste were audited** 88% **of which were plastic.**
Within plastic waste, 84.2% was attributed to food and beverage packaging, **and** 71% **of this was non-recyclable.**
Sikkim and Darjeeling (West Bengal) **emerged as the top contributors in terms of volume, followed by Ladakh, Nagaland, and Uttarakhand.**

IMPACT OF PLASTIC WASTE

- **Impact on Tourism:** The worst plastic accumulation was found around tourist destinations, rivers, and protected areas, indicating the role of unregulated tourism and poor infrastructure.
- **Climate and Biodiversity Linkages:** Plastic waste in the Himalayas contributes to soil and water contamination, affecting biodiversity and local food systems.

- **Health Hazards:** Accumulated plastic waste near human settlements leads to vector-borne diseases, water pollution, and respiratory problems due to open burning.

CHALLENGES IN WASTE GOVERNANCE IN THE HIMALAYAS

- **Lack of Localised Waste Infrastructure:** Most mountain towns and villages lack basic waste collection, segregation, and treatment facilities.
- **Plastic Ban Policies:** Although several Himalayan states have banned certain plastic products, enforcement is weak, due to inconsistent monitoring, and a lack of viable alternatives for local communities and vendors.

- **Low Awareness:** There is insufficient awareness among producers about their responsibilities under **Extended Producer Responsibility (EPR).**
    - Also tourists often lack both education and sensitivity towards sustainable practices.
- **Dispersed Settlements:** The rugged topography, scattered population, and seasonal weather conditions make it logistically challenging to establish and maintain effective waste management systems across the Himalayan belt.

INDIA'S EFFORTS IN TACKLING PLASTIC WASTE

- **Extended Producer Responsibility (EPR):** The Indian government has implemented EPR, making plastic manufacturers responsible for managing and disposing of the waste generated by their products.
- **Plastic Waste Management (Amendment) Rules, 2022:** It prohibits manufacture, import, stocking, distribution, sale and use of plastic carry bags having thickness less than **120 microns.**
- **Swachh Bharat Abhiyan:** It is a national cleanliness campaign, which includes the collection and disposal of plastic waste.
- **Plastic Parks:** India has set up Plastic Parks, which are specialized industrial zones for recycling and processing plastic waste.

WAY AHEAD

- **Mountain-Sensitive Waste Policies:** Waste management policies that consider geographic remoteness, traditional practices, and ecological sensitivity are essential.
- **Decentralized Waste Systems:** Focus should be on community-based, low-impact waste solutions rooted in traditional knowledge and local governance.
- **Sustainable Tourism Practices:** Establish mandatory waste audits and management protocols at tourist sites, especially around water bodies and pilgrimage circuits.

CABINET APPROVES SEMICONDUCTOR UNIT IN UTTAR PRADESH

News: The Union Cabinet approved the establishment of a Semiconductor Unit in Uttar Pradesh.

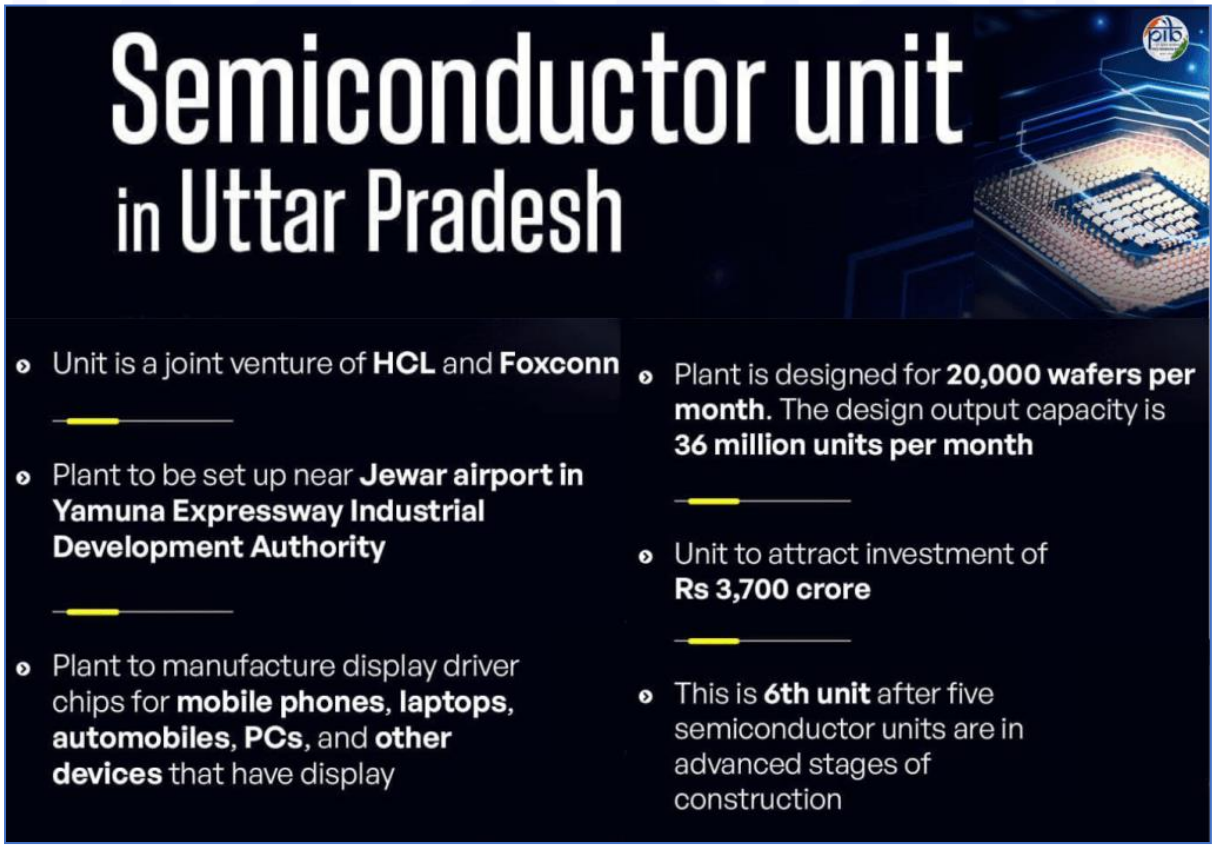
It is the sixth project to receive approval under the **India Semiconductor Mission.**

The unit approved is a joint venture of **HCL and Foxconn** and will attract investment of Rs 3,700 crore.

Together they will set up a plant near Jewar airport in **Yamuna Expressway Industrial Development Authority (YEIDA).**

This plant will **manufacture display driver chips** for mobile phones, laptops, automobiles, PCs, and a myriad of other devices that have displays.

The plant is designed for **20,000 wafers per month.** The design output capacity is **36 million** units per month.



WHAT IS A SEMICONDUCTOR?

- Semiconductors also referred to as 'chips' are highly complex products to design and manufacture, providing the essential functionality for electronic devices to process, store and transmit data.
- The chip comprises interconnections of **transistors, diodes, capacitors** and **resistors**, layered on a wafer sheet of silicon.

SIGNIFICANCE OF THE PROJECT

- **Job Creation:** Semiconductor manufacturing facilities in India create many direct and indirect employment opportunities.
- **Reduced Dependence on Imports:** Establishing more domestic semiconductor industries will enhance the country's self-reliance and resilience in times of geopolitical tensions or disruptions in global supply chains.
- **Import Dependency:** India imported ₹1.71 lakh crore worth of semiconductors in 2024. Nearly 38% came from China.
- **Export Opportunities:** India's semiconductor market is projected to grow from $22 billion (2019) to $110 billion by 2030.

    - Expected to account for 10% of global chip consumption, driven by demand in smartphones, 5G, EVs, AI, IoT.
- **Strategic Importance:** Semiconductor chips are critical components in various strategic sectors such as defense, aerospace, and telecommunications.
    - Having a domestic semiconductor industry ensures greater control over the supply chain and reduces vulnerabilities to disruptions or external pressures.
- **India's R&D Edge:** India houses 20% of the world's semiconductor design engineers.
    - Boosts skills and tech in AI, robotics, EVs, precision tools, and advanced electronics.

Plants Under India Semiconductor Mission
Four plants including a fab and three assembly units – are in Gujarat and one assembly and packaging plant is under construction in Assam.

India's other five semiconductor development projects are in:

- Micron Technology – Sanand, Gujarat.
- Tata Electronics Pvt. Ltd. with PSMC (Taiwan) – Dholera, Gujarat
- Tata Semiconductor Assembly and Test Pvt Ltd (TSAT) – Morigaon, Assam.
- CG Power, in partnership with Renesas Electronics Corporation, Japan and Stars Microelectronics, Thailand – Sanand, Gujarat.
- Kaynes Semicon – Sanand, Gujarat.

CHALLENGES FACED BY INDIA'S SEMICONDUCTOR INDUSTRY

- **Countries** like the US and EU, also sense the semiconductor opportunity and have rolled out more lucrative incentive schemes than India.
- **High capital cost:** A fab facility can cost upwards of $5–10 billion.

- **Talent pool:** While India is the biggest back office for design engineers of all major chip companies, skilled talent that can work on factory floors of a fabrication plant is still hard to come by.
- **Research and Development:** India currently lacks research in semiconductor design, where the future of the chip is decided.
- **Power supply:** An uninterrupted supply of power is central to the process, with just seconds of fluctuations or spikes causing millions in losses.
- **Water intensive:** Chip-making requires gallons of ultrapure water in a single day.

WHAT IS CHIP 4?

"**Chip 4**" is a term referring to the **Chip 4 Alliance**, an informal semi-conductor alliance involving **four major economies**:

MEMBERS:

- **United States**
- **Japan**
- **South Korea**
- **Taiwan**

WHAT IS CHIP 4?

It is a proposed alliance initiated by the **United States** to strengthen cooperation among leading semiconductor manufacturing nations to:

- **Secure supply chains** for semiconductors
- **Reduce dependence on China**
- **Enhance technological collaboration**

OBJECTIVES OF CHIP 4:

- Promote **resilient and secure semiconductor supply chains**
- Coordinate **R&D and investment**
- Reduce risks from **geopolitical tensions**, especially involving **China**
- Counter **China's dominance** and rising influence in tech

INDIA AND CHIP 4:

India is **not part of Chip 4**, but is:

- Promoting its own **semiconductor manufacturing ambitions** under initiatives like **Make in India** and **Semicon India Programme**
- Collaborating bilaterally with **US, Japan, and Taiwan** for tech partnerships

INDIA'S TRADE RELATIONS WITH TURKEY AND AZERBAIJAN

News: India's trade relations with **Turkey and Azerbaijan** have come under renewed strain after both countries **criticised India's recent military strikes** on terror camps located in Pakistan and Pakistan-occupied Kashmir (PoK), as part of **Operation Sindoor**. Their public support for Pakistan in this conflict has led to strong reactions in India, including **calls for boycott** of goods and **advisories against travel** to these countries.

INDIA-TURKEY TRADE RELATIONS

HISTORICAL CONTEXT

India and Turkey have maintained diplomatic relations since 1948. Economic cooperation grew significantly in the 2000s, bolstered by bilateral visits and the signing of various agreements. Turkey's strategic location as a bridge between Europe and Asia also makes it a valuable trade partner.

TRADE STATISTICS (FY 2023-24)

- **Total Bilateral Trade**: USD 10.43 billion
- **India's Exports to Turkey**: USD 6.65 billion

- **India's Imports from Turkey**: USD 3.78 billion

MAJOR EXPORT AND IMPORT COMMODITIES

- **India's Exports**: Organic chemicals, iron and steel, machinery, textiles, pharmaceuticals, rice, vehicles.
- **India's Imports**: Machinery, iron and steel products, marble, fresh apples, mineral fuels.

TRADE AGREEMENTS AND FRAMEWORKS

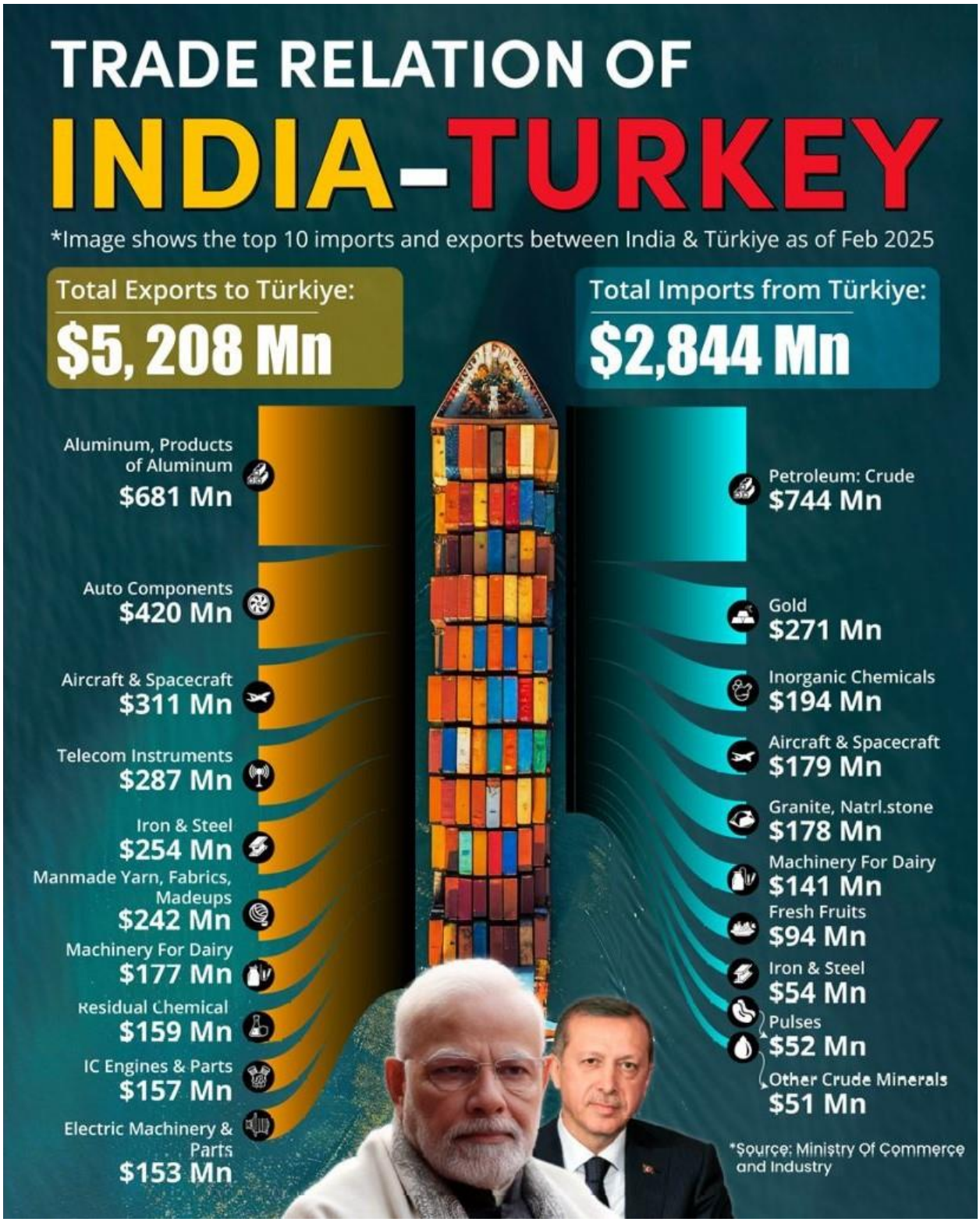
- **Double Taxation Avoidance Agreement (DTAA)**:
  - Signed in 1996, this agreement prevents individuals and businesses from being taxed twice for the same income in both India and Turkey.
- **Bilateral Investment Promotion and Protection Agreement (BIPA)**:
  - Although a formal agreement was signed, progress on implementation remains slow. However, Indian companies like TATA, Mahindra, and Wipro have explored business operations in Turkey.
- **Customs Cooperation Agreement (2015)**:
  - Facilitates customs procedures and aims to curb illegal trade while ensuring smoother trade operations.
- **Joint Committee on Economic and Technical Cooperation (JCETC)**:
  - A mechanism to enhance trade and economic cooperation by resolving disputes and identifying new trade areas.
- **India-Turkey Business Council**:
  - Supported by FICCI and DEIK (Turkish Foreign Economic Relations Board), this platform promotes B2B interactions.

INVESTMENTS

- **Turkish FDI in India**: USD 227.5 million

- **Indian Investments in Turkey**: USD 151 million

Sectors include automotive components, IT, textiles, tourism, and food processing. Indian companies like Polyplex and GMR have operations in Turkey.



INDIA–AZERBAIJAN TRADE RELATIONS

STRATEGIC IMPORTANCE

India's relationship with Azerbaijan is largely shaped by energy security, as the country is a significant supplier of crude oil to India. Diplomatic relations were established in 1992, post the dissolution of the USSR.

TRADE STATISTICS (2023)

- **Total Bilateral Trade**: USD 1.435 billion
- **India's Exports to Azerbaijan**: USD 201 million
- **India's Imports from Azerbaijan**: USD 1.235 billion

MAJOR EXPORT AND IMPORT COMMODITIES

- **India's Exports**: Rice, smartphones, ceramic tiles, pharmaceuticals, tea, mechanical appliances.
- **India's Imports**: Crude oil (98% of imports), urea, oil coke.

TRADE AND ENERGY AGREEMENTS

- **Energy Cooperation**:
    - **ONGC Videsh Ltd (OVL)** is a major investor in Azerbaijan's oil sector. It has stakes in the Azeri-Chirag-Gunashli (ACG) oil fields and the Baku-Tbilisi-Ceyhan (BTC) pipeline.
- **MoU between GAIL and SOCAR**:
    - This agreement explores cooperation in petrochemicals, LNG, and pipeline infrastructure.
- **Bilateral Investment Treaty**:
    - Though a formal treaty is yet to be fully ratified, both nations continue to promote investor protection and ease of doing business.
- **Trade Promotion and Business Forums**:

- Regular interactions facilitated by the India-CIS Chamber of Commerce help enhance B2B linkages.

People Presence:

- Turkey: 3,000 Indian nationals (including ~200 students)
- Azerbaijan: 1,500 Indians, mainly professionals and businesspersons.

IMPACT OF OPERATION SINDOOR

BACKGROUND

Operation Sindoor was India's military retaliation against a terrorist attack in Kashmir. The operation garnered global attention, and while many countries supported India's stance on terrorism, Turkey and Azerbaijan publicly sided with Pakistan, citing religious and geopolitical solidarity.

IMMEDIATE REPERCUSSIONS

BOYCOTTS AND PUBLIC SENTIMENT:

- Several Indian traders and consumer groups called for a boycott of Turkish and Azerbaijani products. The Confederation of All India Traders (CAIT) launched campaigns urging the government to restrict imports.
- Products such as Turkish coffee, apples, and chocolates faced market rejection.

MARBLE INDUSTRY:

- The **Udaipur Marble Processors Association** called for a complete ban on Turkish marble.
- President **Kapil Surana** emphasized: "Business cannot be bigger than the nation."

APPLE TRADE:

- In **Pune**, traders boycotted Turkish apples, previously valued at **₹1,000–1,200 crore** in seasonal revenue.
- Trader **Suyog Zende** said the decision was driven by **patriotism**, choosing instead to source apples from **Himachal Pradesh, Uttarakhand, Iran**, and others.

GOVERNMENTAL ACTION:

- India revoked security clearance of Turkish firm Celebi Airport Services, which operated in major airports such as Delhi and Mumbai.
- Diplomatic channels were used to express discontent with both nations.

TOURISM AND CULTURAL EXCHANGE:

- A steep decline was recorded in outbound tourism to Turkey and Azerbaijan. Travel platforms like MakeMyTrip reported up to 250% cancellations for Turkey trips.
- Cultural associations canceled Turkish and Azerbaijani film screenings and events.
- Travel platforms like **EaseMyTrip**, **Cox & Kings**, and **Ixigo** have suspended or discouraged bookings to Turkey.
- **Indian Association of Tour Operators** noted a **15–20% cancellation rate** in the wake of the diplomatic fallout

REBRANDING INITIATIVES:

- The Gems and Jewellery Export Promotion Council (GJEPC) announced that 'Turkish' design jewellery would be rebranded as 'Sindoor-style' in solidarity with the Indian armed forces.

EDUCATION

- The **Association of Indian Universities (AIU)** issued a directive to over 1,100 universities urging suspension of academic collaboration with **Turkey, Pakistan, and Bangladesh**.
- The AIU letter, titled ***"Appeal for National Solidarity in Response to Pakistan and Its Allies' State-Sponsored Terrorism Against India,"*** condemned anti-India narratives and called for academic unity.
- Major Indian universities such as **Jawaharlal Nehru University (JNU)**, **Jamia Millia Islamia (JMI)**, and **Chhatrapati Shahu Ji Maharaj University (CSJMU)** have already canceled Memoranda of Understanding (MoUs) with Turkish institutions.

ECONOMIC IMPACT

- **Turkey**: Exports of fresh produce and marble were severely hit.
- **Azerbaijan**: While crude oil exports continued due to long-term contracts, new business proposals saw a decline.
- Indian importers began looking toward alternative markets like Egypt (for apples) and Vietnam (for ceramics).

FUTURE PROSPECTS

Despite the current strain, both Turkey and Azerbaijan hold strategic importance for India. Experts believe that:

- **Economic Diplomacy**: With time and strategic dialogue, economic cooperation may normalize, particularly if political posturing gives way to pragmatic engagement.

- **Diversification**: India is already exploring other partners to reduce dependence on politically volatile nations.
- **Strategic Autonomy**: India's balanced approach to foreign policy will likely drive a reset in ties when geopolitical tensions ease.

CONCLUSION

India's trade relations with Turkey and Azerbaijan have historically been marked by mutual economic benefit and strategic interests. However, geopolitical events such as Operation Sindoor demonstrate how swiftly diplomatic positions can translate into trade consequences.

In the long run, India will likely focus on trade diversification and self-reliance, even as it remains open to re-engaging with these countries under mutually respectful terms.

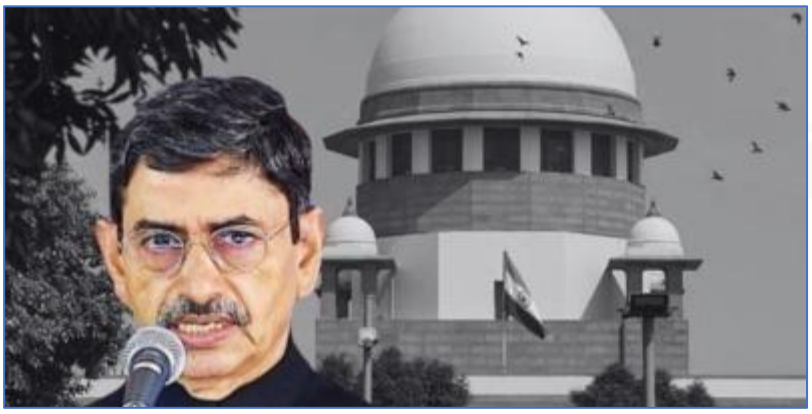
These developments highlight the increasingly interconnected nature of foreign policy, economic security, and public sentiment in global trade dynamics.

THE CLOSING ARGUMENT

News: The Union Government has filed a **Presidential Reference under Article 143** to seek the Supreme Court's opinion on the powers of Governors, even after the Court's **April 8, 2025** judgment declared withholding of assent to **10 Tamil Nadu Bills by Governor R.N**. Ravi as unconstitutional, thereby reigniting a settled constitutional debate.

SUPREME COURT'S 2025 VERDICT ON GOVERNORS' POWERS

- **Judicial Clarity on Assent:** The **SC held the Governor's indefinite withholding of Bills as "illegal and erroneous"**, reasserting that the Governor is bound by the Constitution and cannot stall the legislative process arbitrarily.
- **Constitutional Framework Reaffirmed:** The Court drew on **Constituent Assembly Debates, past judgments, and expert committee reports** to uphold that the **Governor is a constitutional head** with limited discretion.
- **No Timelines, Yet No Infinite Delay:** Although the Constitution lacks explicit timelines for assent, the judgment clarified that **Governors and the President must act within a reasonable timeframe** to respect legislative supremacy.



PRESIDENTIAL REFERENCE: A CONTROVERSIAL MOVE

- **Article 143 Invoked Post-Judgment:** The Centre's decision to seek an advisory opinion via a **Presidential Reference contradicts the**

settled judicial verdict, and raises questions about undermining the judiciary.

- **Scholars Question Intent:** Experts argue that if clarity was the intent, the **Centre could have opted for a review petition**, not a reference, which is generally reserved for unsettled constitutional questions.
- **Hidden Centralising Motive:** The move is seen as **an attempt to reclaim or assert central influence through Governors**, contrary to the federal spirit and original constitutional vision.

FEDERALISM AND POLITICAL CONSENSUS

- **Governors as Instruments of Central Overreach:** In recent years, **Governors have acted in ways that challenge State autonomy**, damaging the federal compact and causing Centre-State friction.
- **Court's Verdict Could Enable Reforms:** The April 2025 ruling offered a **structured framework** to reform and depoliticize the role of Governors in line with cooperative federalism.
- **Opportunity for Political Dialogue Missed:** Instead of building consensus through **CM-level consultations or constitutional amendments**, the Centre chose a legalistic route, deepening federal tensions.

RBI'S SURPLUS

News: The central board of directors of the Reserve Bank of India (RBI) reviewed the **Economic Capital Framework (ECF)**. It is estimated that for the accounting year 2024-25, the RBI may transfer a record sum ranging between Rs 2.5 lakh crore and Rs 3 lakh crore as surplus to the government. In 2023-24, the RBI had transferred the highest-ever surplus of Rs 2.11 lakh crore.

WHAT IS THE RBI'S SURPLUS?

- The Reserve Bank of India (RBI), as the **nation's central bank**, is **owned by the Government of India**.
- Unlike commercial banks or public sector companies, it **does not declare a "dividend" in the traditional corporate sense.**
- Instead, under **Section 47 of the RBI Act, 1934**, the central bank is mandated to transfer its **surplus profits** to the Central Government after making necessary provisions.
- The **RBI's surplus** is the **excess of its income over expenditure** after accounting for provisions such as:
    - Bad and doubtful debts
    - Depreciation of assets
    - Staff welfare funds and pension liabilities
    - Contingency and asset development reserves
- This surplus is **transferred to the Central Government** under **Section 47 of the RBI Act, 1934**.
- The RBI is **exempt from income tax** under **Section 48 of the RBI Act, 1934**.

How Does the RBI Earn Profits? The RBI earns income mainly from:

Source of Income	Description
Foreign assets	Earnings from foreign securities, treasury bills, and deposits with other central banks

Domestic government securities	Interest from rupee-denominated bonds
Lending to banks	Through mechanisms like LAF (Liquidity Adjustment Facility), MSF, etc.
Commission	For managing borrowings of the central and state governments
Other receipts	Miscellaneous income, e.g., penalty payments by banks
Expenditures include: • Printing of currency notes • Staff salaries and pensions • Commission to banks and dealers	

FORMAL POLICY ON SURPLUS DISTRIBUTION

- Although there is no law mandating a fixed surplus transfer formula, an important framework governs this process.
- The **Economic Capital Framework (ECF)**, introduced after the **Bimal Jalan Committee recommendations in 2019**, determines the size of contingency reserves and the share of realised surplus to be transferred.
- **The framework aims to balance two objectives:**
    - Maintaining the RBI's financial strength and independence through adequate reserves
    - Ensuring reasonable surplus transfer to the government
- Before this, the **Malegam Committee (2013)** had recommended higher transfers, which led to the RBI transferring nearly 99.99% of its surplus in some years.
- **Global practices**: Like in India, central banks in both the UK and the US decide after consultations with the government. But in Japan, it is the government that decides.
    - By and large, with a few exceptions, the quantum of surplus transfer averages around **5% of the GDP.**

UNEMPLOYMENT AT 5.1%, WOMEN LABOUR FORCE RISES: PLFS DATA

News: The latest **Periodic Labour Force Survey (PLFS) data**, released by the Ministry of Statistics & Programme Implementation (MoSPI), shows that India's unemployment rate stood at 5.1% in April 2025.

WHAT IS PERIODIC LABOUR FORCE SURVEY (PLFS)?

- It is **conducted by the MoSPI** to assess employment and unemployment trends in India.
    - It provides key labour market indicators, including the **Labour Force Participation Rate (LFPR), Worker Population Ratio (WPR), and Unemployment Rate (UR).**
- **Features:**
    - **Revamped Sampling Design (2025):** The survey now includes **monthly estimates for both rural and urban areas**, improving data accuracy.
    - **Current Weekly Status (CWS) Approach:** Measures employment status **based on activity in the last seven days** preceding the survey.
    - **Expanded Coverage:** The sample size has increased to 22,692 **First Stage Units (FSUs)**, covering both rural and urban sectors.
        - Earlier, 12,800 FSUs surveyed in PLFS up to December, 2024.
    - **Annual Reports:** PLFS results are now released based on the calendar year, ensuring timely updates.

REVAMPED PLFS SAMPLE DESIGN IN THE PLFS DISSEMINATION:

MONTHLY ESTIMATES

- Providing monthly estimates for labour market indicators.

RURAL AREA ESTIMATES

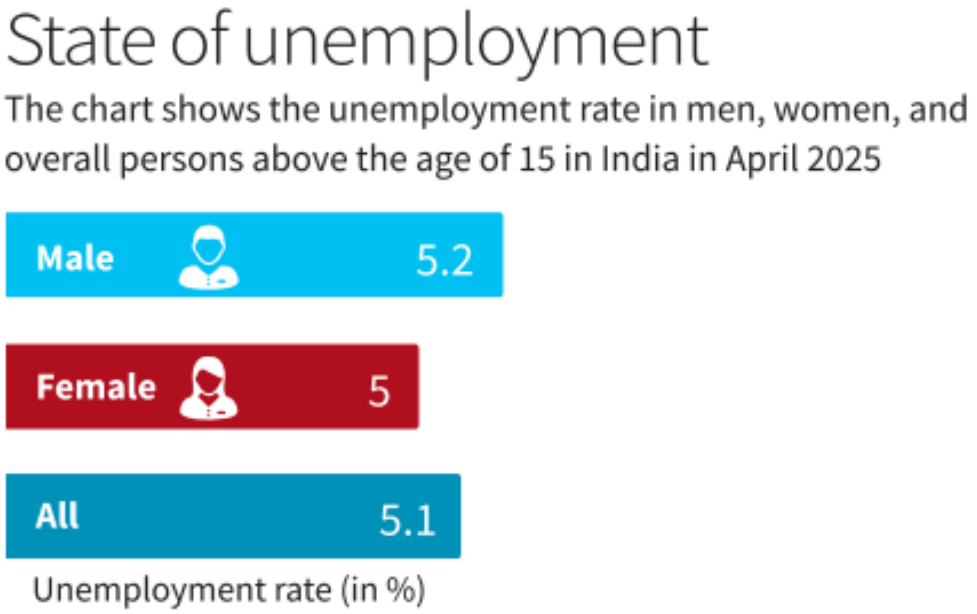
- Extending quarterly estimates to include rural regions.

CALENDAR YEAR REPORTING

- Transitioning towards reporting based on calendar years.

KEY FINDINGS OF THE PLFS REPORT

- **Unemployment Rate**: It is defined as the percentage of persons unemployed among the persons in the labour force.
    - Overall (persons aged 15 years and above): 5.1%
    - Male: 5.2%; Female: 5.0%
    - Rural: 4.5%; Urban: 6.5%
    - Youth among urban females (15-29 years): 23.7%



- **Labour Force Participation Rate (LFPR):** It is defined as the percentage of persons in the labour force (i.e. working or seeking or available for work) in the population.
    - For persons aged 15 years and above: 55.6%
    - Rural: 58.0%; Urban: 50.7%

  - Male: 79.0% (rural areas); 75.3% (urban areas)
  - Female: 38.2% (rural areas); 25.7% (urban areas)
- **Worker Population Ratio (WPR):** It measures employed persons as a percentage of the total population.
  - Overall: 52.8%
  - Rural WPR: 55.4%; Urban WPR: 47.4%
  - Female WPR: 36.8% (rural areas); 23.5% (urban areas)

SIGNIFICANCE OF THE FINDINGS

- The rise in female labour force participation, particularly in rural areas, signifies increasing economic engagement.
- However, high youth unemployment among urban females raises concerns about gender disparities, job availability, and skill gaps.
- The revamped PLFS model provides monthly employment estimates, but timely implementation of corrective measures remains a challenge.

PUSHKAR KUMBH

News: After a 12-year interval, Uttarakhand is hosting the **Pushkar Kumbh Mela** at **Keshav Prayag in Mana village.**

ABOUT PUSHKAR KUMBH

- Pushkar Kumbh is a sacred **Vaishnavite pilgrimage** held every 1**2 years at Keshav Prayag**, the confluence of the **Alaknanda and Saraswati rivers in Mana village, Uttarakhand**, when Jupiter enters Gemini.
- It holds deep spiritual significance as the site where **Ved Vyas composed the Mahabharata.** Saints like **Ramanujacharya and Madhvacharya are believed to have received divine knowledge from Goddess Saraswati here**.
- Though smaller than traditional Kumbhs, it attracts devotees, especially from South India, and is seen as a bridge uniting India's diverse spiritual traditions.

SIKKIM'S 50TH STATEHOOD DAY

News: Prime Minister Narendra Modi extended his wishes on the occasion of the **50th anniversary of Sikkim's statehood.**

ABOUT

- Sikkim became the **22nd state of India** on **May 16, 1975,** under the leadership of **Lhendup Dorjee Khangsarpa,** the state's first Chief Minister.
    - Sikkim was earlier referred to as the **Chogyal Kingdom,** ruled by Chogyals.
- **Location:** Sikkim is located in the **northeastern part of the country,** in the eastern Himalayas.
    - It is bordered by the Tibet Autonomous Region of China to the north and northeast, by Bhutan to the southeast, by the Indian state of West Bengal to the south, and by Nepal to the west.
- **Kangchenjunga,** the highest peak of India is situated in Sikkim.
- **The People of Sikkim consist of three ethnic groups,** that is, Lepcha, Bhutia and Nepali.
- **The official languages of the state** are English, Nepali, Sikkimese (Bhutia) and Lepcha.
- **State Animal:** Red Panda

APPOINTMENT OF UPSC CHAIRMAN

News: President Droupadi Murmu has appointed **Dr. Ajay Kumar** as the Chairman of the Union Public Service Commission under **Article 316 (1) of the Constitution.**

ABOUT

- The post of UPSC chairman felt vacant after the completion of **Preeti Sudan's tenure.**
- **The UPSC conducts** civil services examinations to select officers for the Indian Administrative Service, Indian Foreign Service and the Indian Police Service, among others.
- **Members:** Besides the chairman, it can have a **maximum of 10 members.**
    - A UPSC chairman is appointed for a **term of six years** or until attaining **65 years of age, all members have the same term.**
- **Reappointment:** The UPSC Chairman is **not eligible for reappointment** after completing their term.
- **Removal (317): Removal by President:**
    - Can only be done on the ground of misbehaviour.
    - Requires a Supreme Court inquiry and report confirming the misbehaviour.
    - Reference to the Supreme Court is made by the President.
    - **Can remove without Supreme Court inquiry if the person:** Is adjudged insolvent, engages in paid employment outside office duties, is unfit due to mental or physical infirmity.

INDIA'S TRADE DEFICIT WIDENS TO $8.65 BILLION

News: India's total trade deficit, combining both merchandise and services, widened to **$8.65 billion in April 2025**, compared to **$5.77 billion in April 2024**, as per data released by the Ministry of Commerce and Industry.

ABOUT

- **Export Performance:** India's total exports (merchandise + services) in FY 2024–25 touched an all-time high of **$824.9 billion,** registering a **6%** year-on-year growth.
- **Merchandise Trade (Goods):**
  - **Exports rose 9%** to **$38.49 billion** in April 2025.
  - **Imports increased** at a faster pace**, 19.1%,** reaching **$64.91 billion.**
  - Merchandise trade deficit widened to **$26.4 billion** (up from **$19.19 billion in April 2024).**
- **Services Trade:**
  - **Services exports** grew 17% to **$35.31 billion.**
  - **Services imports** rose 4.6% to **$17.54 billion.**
  - **Services trade surplus** thus stood at **$17.77 billion,** which helped moderate the overall deficit.

What is Trade Deficit?
If a country imports more goods and services from other countries than it exports to them, it is said to have a trade deficit.

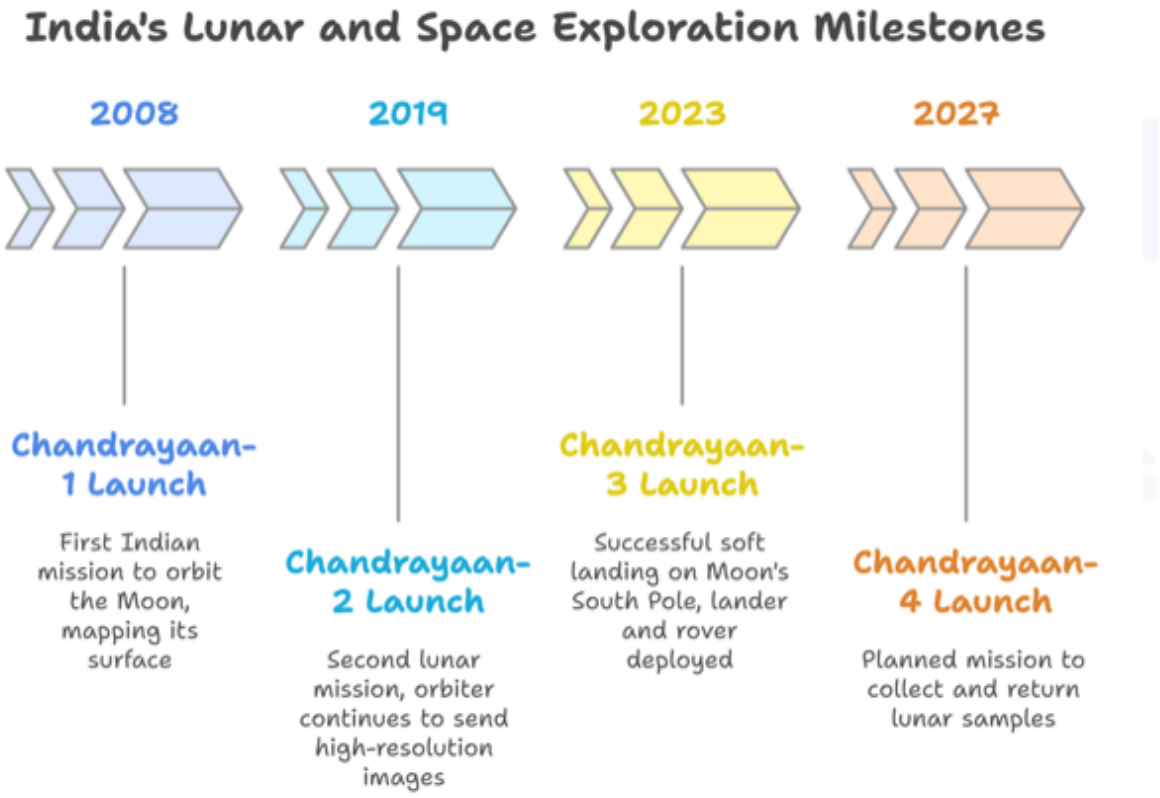
Trade Deficit weakens the domestic currency.

LUPEX MISSION

News: India and Japan are set to enter the design phase of the **Lunar Polar Exploration (LUPEX)** mission, also referred to as **Chandrayaan-5.**

ABOUT THE MISSION

- **Objective:** To conduct detailed exploration of the Moon's south polar region, especially focusing on water ice deposits.
- **Mission life:** Approved by the Cabinet in March this year, the mission is proposed to be for **3.5 months (100 days)**.
- **Lander and Rover: ISRO** is developing the lander, while **JAXA** is building and programming the 350-kg rover to traverse the lunar surface and climb slopes up to **25 degrees**.

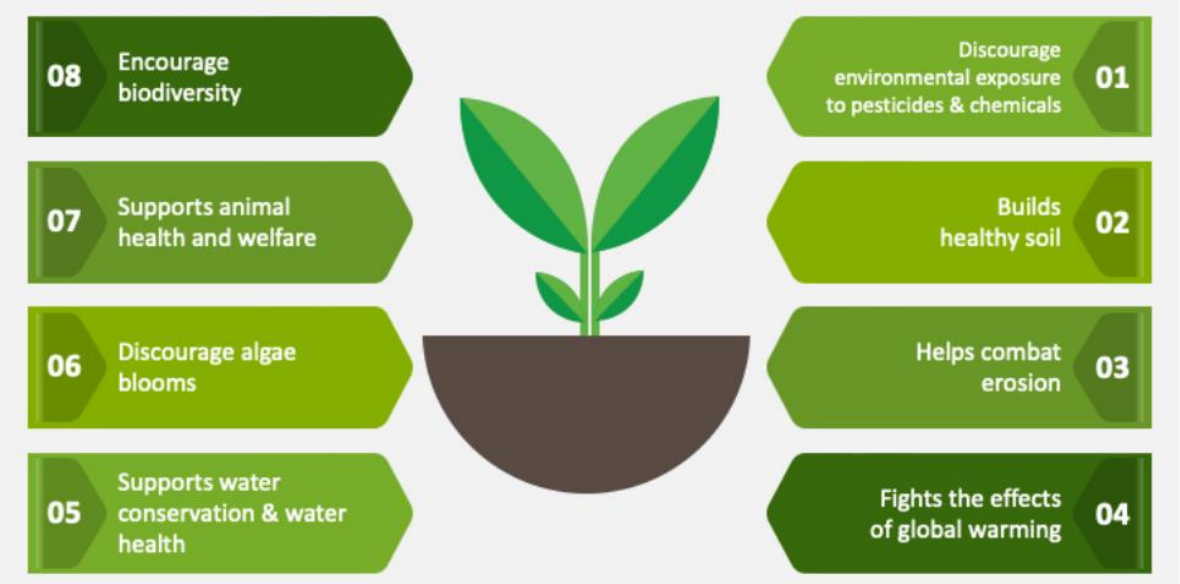


NATURAL FARMING CERTIFICATION SYSTEM

News: In a bid to boost consumer trust and farmer incomes, the central government is likely to introduce a nationwide **Natural Farming Certification System (NFCS).**

WHAT IS NATURAL FARMING?

- Natural Farming is a **chemical-free farming system** rooted in Indian tradition enriched with modern understanding of ecology, resource recycling and on-farm resource optimization.



KEY FEATURES OF NATURAL FARMING

- **Zero Budget Natural Farming (ZBNF):** A popular model promoted by **Subhash Palekar,** aimed at drastically reducing input costs.
- **Core practices:**
  - **Beejamrit:** Natural seed treatment.
  - **Jeevamrit:** Soil inoculation using fermented cow dung and urine.
  - **Mulching and Waaphasa:** Moisture retention and aeration of soil.

- **Low input, high sustainability:** Reduces dependence on market-bought inputs.

BENEFITS OF NATURAL FARMING

- **Lower Input Costs:** Natural farming requires fewer external inputs like chemical fertilizers and pesticides, which can reduce overall production costs for farmers.
- **Ensures Better Health:** As Natural Farming does not use any synthetic chemicals, health risks and hazards are eliminated.
    - The food has higher nutrition density and therefore offers better health benefits.
- **Environment Conservation:** Natural Farming ensures better soil biology, improved agro-biodiversity and a more judicious usage of water with much smaller carbon and nitrogen footprints.
- **Sustainable Farming Practices:** By avoiding the overuse of chemical fertilizers and pesticides, natural farming promotes a more sustainable and regenerative approach to agriculture.

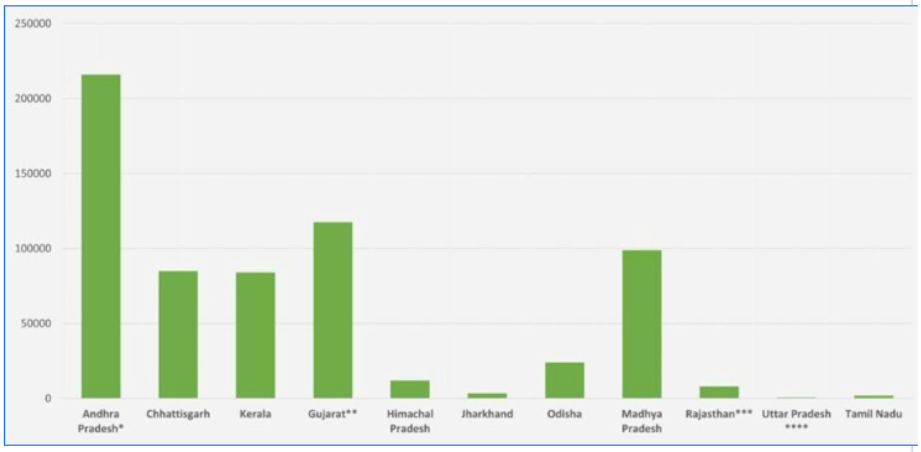


Fig. Major states in India practicing Natural Farming (Source: NITI Aayog) Prospects and challenges of Natural Farming

WHY IS CERTIFICATION NEEDED?

- **Trust Building:** It helps consumers distinguish genuine natural farm produce.

- **Market Access:** It enables farmers to fetch premium prices and enter niche markets (domestic and international).
- **Standardization:** It brings uniformity to natural farming practices.
- **Monitoring and Accountability:** It ensures traceability and quality control.

CHALLENGES IN SCALING NATURAL FARMING

- **Initial Yield Reduction:** During the transition from conventional to natural farming, many farmers reported a temporary decline in crop yields.
- **Limited Scientific Backing:** Although natural farming is promoted as environmentally sustainable, there is limited large-scale, long-term scientific research validating its productivity, resilience, and scalability across diverse agro-climatic zones.
- **Inadequate Institutional Support:** Coordination between agriculture departments, research bodies, and rural institutions is limited.

IAS ORIGIN

HERE IT BEGINS

Powered by Ecoholics

CONTACT IAS ORIGIN TEAM AT 7880-00-9099