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IN THIS MAGAZINE

REIMAGINING CARE: STRATEGIES FOR EMPOWERING CAREGIVERS IN VIKSIT BHARAT@2047	2
HEATWAVES AND LIGHTNING NOTIFIED AS NATURAL CALAMITIES	4
BLUE STRAGGLER STAR (BSS)	6
GOBARDHAN (GALVANIZING ORGANIC BIO-AGRO RESOURCES DHAN)	7
BITCHAT	9
SATPURA-MELGHAT TIGER CORRIDOR	10
LIST OF WORLD HERITAGE IN DANGER	11
WOMEN'S WORK PARTICIPATION IN INDIA	13
DR. M.S. SWAMINATHAN AWARD FOR ENVIRONMENT PROTECTION	14
HOUBARA BUSTARDS	16
NITROSAMINES	17
DHIMSA DANCE LATEST NEWS	18
DANUBE RIVER	19
ARCTIC COUNCIL	20
ORGAN TRANSPLANTATION IN INDIA	21
CLOUDED LEOPARD CONSERVATION ACTION PLAN (CAP)	24

SPECIAL ARTICLES

CLIMATE CHANGE: DRIVING WILDLIFE TOWARDS EXTINCTION <i>[Muhammad Yasir]</i>	26
REDEFINING THE AIRSPACE: CENTRE SOUNDS ALERT ON EVOLVING ROGUE DRONE THREATS ALONG BORDERS <i>[Arun Sasi]</i>	27
FREE TRADE AGREEMENTS (FTAS) <i>[Arun Payyanur]</i>	28
UNVEILING THE INDUS VALLEY CIVILISATION: RECENT DISCOVERIES. <i>[Bhavya K]</i>	32

REIMAGINING CARE: STRATEGIES FOR EMPOWERING CAREGIVERS IN VIKSIT BHARAT@2047

NITI Aayog released a landmark report titled Reimagining Care: Strategies for Empowering Caregivers in Viksit Bharat@2047.



The Report: Reimagining Care in Viksit Bharat@2047

About The Report: Reimagining Care in Viksit Bharat@2047:

Who are Caregivers?

- According to the World Health Organization (WHO) definition adopted in the report, **caregivers** are individuals who provide physical, emotional, and social support to people who cannot independently perform activities of daily living due to age, chronic illness, or disability.
- **Formal Caregivers:** Trained professionals (such as personal care aides, home health aides, and geriatric assistants) who deliver non-medical or clinical support in homes, hospitals, or institutional care facilities for remuneration.
- **Informal Caregivers:** Family members, friends, or community volunteers who provide unpaid, non-formal long-term care to dependents.

Current Indian Landscape of Caregivers:

- **Rapid Demographic Aging:** India's elderly population (60+ years) stood at 149 million (10.5% of total population) in 2022 and is projected to reach **347 million (20.8%) by 2050**, massively expanding long-term care needs.
- **High Prevalence of Disability:** Over **26.8 million persons with disabilities (2.21% of the population)** rely on family or professional support, with 21 benchmark disability categories defined under the RPwD Act, 2016.
- **Extreme Disparity in Unpaid Care:** According to the Time Use Survey, Indian women spend an average of **299 minutes per day** on unpaid domestic and caregiving duties compared to only 97 minutes by men.
- **Expanding Market Size:** The Indian care services market was valued at **USD 29.62 billion in 2023** and is expanding at a CAGR of 13.76% to reach USD 72.31 billion by 2030.

Types of Caregivers in India:

- **Family-Based Informal Caregivers:** Relatives providing unpaid assistance within households; traditionally forms the main backbone of India's social fabric.
- **Community-Based Informal Caregivers:** Local volunteers, extended kin, and Self-Help Groups (SHGs) delivering neighborly assistance (e.g., Kudumbashree's K4 Care or Kerala's Neighbourhood Network in Palliative Care).
- **Institutional Formal Caregivers:** Trained staff delivering 24/7 care in old-age homes, rehabilitation centers, and specialized hospital geriatric wards.
- **Home-Based & Specialized Palliative Caregivers:** Paid professionals providing bedside assistance, dementia support, and chronic illness management directly inside patient residences.

Best Global Practices in Caregiving:

- **Japan (Specified Skilled Worker Visa & LTCI):** Implemented mandatory Long-Term Care Insurance (LTCI) in 2000 and introduced the SSW visa scheme to recruit foreign-trained care workers through bilateral G2G frameworks.
- **Germany (Dual Financing & Flexible Care Leave):** Offers a mandatory LTCI model allowing beneficiaries to choose cash allowances for family carers or in-kind professional care, supported by the Familienpflegezeitgesetz (up to 24 months protected leave).
- **China (8-Level Certification & AI/Robotic Integration):** Established an eight-level national competency framework, removed mandatory formal education requirements to widen rural workforce entry, and pioneered international standards (IEC 63310) for eldercare robots.

Challenges Associated with Caregiving in India:

- **Fragmented Institutional & Regulatory Framework:** Absence of an apex statutory body leads to uncoordinated initiatives across health, social justice, skill development, and labor ministries.
- **Lack of Standardized Curricula & Global Benchmarks:** Caregiving courses vary widely in duration and quality, lacking international alignment or mutual recognition in major destination countries.
- **Social Unrecognition & Absence of Safety Nets:** Formal care workers are largely excluded from social security laws (such as the Unorganised Workers Social Security Act), suffering low wages, lack of health insurance, and workplace exploitation.
- **Severe Caregiver Burnout & High Turnover:** Lack of specialized training for managing neuropsychiatric conditions (like Alzheimer's and dementia) causes emotional exhaustion and high attrition rates.
- **Spatial Disruption from Migration:** Rural-to-urban migration of youth leaves elderly parents in villages without traditional informal care networks, widening unmet care demands.

Key Recommendations by NITI Aayog:

- **Constitution of the National Caregiver Council (NCC):** Establish an apex national body under the Ministry of Social Justice & Empowerment to regulate, accredit, and standardize caregiving courses and maintain a National Caregiver Registry.
- **Formulation of a National Policy on Caregiving:** Develop an overarching policy framework to recognize caregiving as an allied health profession, enforce fair minimum wages, and guarantee social security benefits.

- **Standardization under NSQF & Recognition of Prior Learning (RPL):** Align all caregiving qualifications with the National Skills Qualification Framework (NSQF) and use RPL certification to transition informal family carers into the formal workforce.
- **Expansion of Strategic G2G Mobility Pathways:** Leverage Ministry of External Affairs agreements (e.g., India-Germany Triple Win, India-Israel protocols) to train and deploy Indian caregivers with foreign language and cultural competency.
- **Strengthening Family Support & Respite Infrastructure:** Introduce formal care leave provisions for employees, build community respite centers, integrate caregivers with Ayushman Arogya Mandirs, and leverage CSR funding for local care infrastructure.

Conclusion:

Developing a structured caregiving ecosystem transforms care from an unrecognized household burden into a powerful driver of economic growth, gender empowerment, and social dignity. By establishing the National Caregiver Council, standardizing skill qualifications, and expanding international mobility frameworks, India can address its domestic demographic transition while fulfilling global care shortages. Ultimately, professionalizing the care economy ensures that India advances towards Viksit Bharat@2047 as a nation that grows through compassion and cares as it grows.

HEATWAVES AND LIGHTNING NOTIFIED AS NATURAL CALAMITIES

The Ministry of Home Affairs officially included **heatwaves and lightning** in the list of notified natural calamities under the operational guidelines of the State Disaster Response Fund (SDRF) and National Disaster Response Fund (NDRF) for 2026–2031.



Heatwaves and Lightning Declared Notified Natural Calamities in India

About Heatwaves and Lightning Declared Notified Natural Calamities in India:

What it is?

- Notified natural calamities are statutory weather or geological hazards recognized under the **Disaster Management Act, 2005**, making them eligible for systematic central and state financial assistance, relief, and long-term mitigation.
- With the inclusion of heatwaves and lightning, the official list of nationally recognized disasters expands from **12 to 14 categories** (joining cyclones, droughts, earthquakes, fires, floods, tsunamis, hailstorms, landslides, avalanches, cloudbursts, pest attacks, and cold waves).

Stats & Data on Heatwaves and Lightning in India:

- **Highest Mortality Natural Hazard:** Lightning is India's single largest killer among extreme weather hazards, causing over **2,000 to 2,500 fatalities annually** – accounting for more than **35% of all natural disaster deaths** in the country.
- **Extreme Rural Vulnerability:** Approximately **96% of lightning deaths** and **77% of crop-season casualties** occur in rural areas, predominantly impacting agricultural labor and tribal populations working in open fields during monsoon sowing months.
- **Surging Heatstroke & Public Health Burden:** During peak summer months (March–July 2026), official health surveillance recorded thousands of severe heatstroke cases (over **4,853 reported cases**) and multiple confirmed heatstroke fatalities across affected states.

- **Massive Economic Exposure:** Lightning strikes cause over ₹12-15 crore in annual ex-gratia disaster payouts per highly impacted state (e.g., Bihar, Odisha), alongside extensive losses in livestock, agricultural produce, and power infrastructure.

Regions Impacted by Heatwaves and Lightning in India:

- **East & Chota Nagpur Plateau (Primary Lightning Belt):** Odisha, Jharkhand, Bihar, and West Bengal represent the highest lightning strike density zones in India due to deep convective cloud formations generated by Bay of Bengal moisture colliding with dry continental air.
- **North-Western & Central Plains (Heatwave Core Zone):** Rajasthan, Punjab, Haryana, Delhi, Uttar Pradesh, and Madhya Pradesh face the most prolonged summer heatwaves, with maximum temperatures regularly exceeding 45°C-48°C.
- **Western Peninsular & Deccan Plateau (High Heat-Humidity Risk):** Maharashtra (Vidarbha and Marathwada), Telangana, and Northern Karnataka experience severe dual impacts, suffering both intense dry heatwaves in early summer and pre-monsoon convective lightning storms.
- **North-Eastern Hill States (High Lightning Frequency):** Assam, Meghalaya, Sikkim, and Arunachal Pradesh record high lightning activity per square kilometer due to steep orographic lifting along the Himalayan foothills during monsoon transitions.

Calamities Notification Process in India:

- **Finance Commission Assessment:** The Finance Commission evaluates historical expenditure, frequency trends, and hazard mortality across states to recommend inclusions and 5-year budget allocations.
- **Ministry of Home Affairs (MHA) Notification:** MHA formally accepts panel recommendations and issues revised operational guidelines under the Disaster Management Act, 2005.
- **Primary State Allocation (SDRF):** States receive annual grants split between the Centre and States (75:25 for general states, 90:10 for North-Eastern and Himalayan states).
- **Fund Bifurcation (Response vs. Mitigation):** Standard disaster allocations divide funds into 80% for response & immediate relief (SDRF) and 20% for long-term disaster mitigation (SDMF).
- **National Backup Assistance (NDRF):** When a notified disaster's severity exceeds state capacity, additional financial support is disbursed directly from the central National Disaster Response Fund.

Need for Notifying Heatwaves and Lightning in India:

- **Relieving the 10% SDRF Trap:** Previously, states could only draw up to 10% of their SDRF funds under the restrictive local disaster clause, which proved grossly inadequate for widespread heatwaves.
- **Rising Fatality Leader Status:** Lightning has emerged as the #1 cause of natural disaster deaths in India, accounting for over 35% of all disaster-related fatalities in recent years.
- **Escalating Heatwave Frequency & Health Impact:** India recorded thousands of heatstroke cases and rising confirmed heat deaths during summer months, with rural and urban outdoor workers bearing the heaviest burden.
- **Climate Change-Driven Weather Volatility:** Global warming has increased atmospheric instability, leading to a surge in lightning strikes and prolonged extreme heat spells.
- **Disproportionate Impact on Informal Workers:** Outdoor labor, agricultural workers, and gig economy riders lack formal heat risk insurance and financial compensation for lost workdays during extreme heat alerts.

Significance of the Move:

- **Unlocking National and State Disaster Funding:** States gain full access to primary SDRF and NDRF reserves rather than relying on constrained local emergency funds.
- **Funding Long-Term Climate Mitigation:** Allows 20% of disaster allocations (State Disaster Mitigation Fund) to be used for cool roofs, shaded urban footpaths, and lightning protection poles.
- **Enabling Legal Protections for Workers:** Official disaster status empowers district authorities to enforce mandatory work stoppages, rest breaks, and safety protocols during extreme heat alerts.
- **Standardized Surveillance & Public Health Integration:** Aligns disaster relief directly with public health systems, including the National Programme on Climate Change & Human Health (NPCCHH) and NHRIDS surveillance.
- **Support for Heat Action Plans (HAPs):** Provides institutional funding to scale local Heat Action Plans, early warning SMS networks (SACHET portal), and cooling infrastructure nationwide.

Conclusion:

Officially recognizing heatwaves and lightning as notified natural calamities addresses a long-standing gap in India's climate risk architecture. By unlocking dedicated SDRF and NDRF funding, the decision enables states to shift from temporary local relief to comprehensive, proactive disaster management. Ultimately, this policy update ensures crucial financial, physical, and legal protections for millions of outdoor workers and vulnerable populations facing extreme weather.

BLUE STRAGGLER STAR (BSS)

Indian astronomers from the Indian Institute of Astrophysics (IIA), along with international collaborators, have reported the rare discovery of a **Blue Straggler Star (BSS)** actively forming in the binary system TIC 327546480.



Blue Straggler Stars (BSS)

About Blue Straggler Stars (BSS):

What It Is?

- A Blue Straggler Star (BSS) is an unusually hot, luminous, blue, and massive star found within old star clusters (globular or open clusters).
- While standard theories of stellar evolution dictate that stars of such high mass should have burned through their nuclear fuel and evolved into white dwarfs or red giants long ago, these stars appear much younger than the surrounding cluster population – effectively lagging behind or straggling in their evolutionary timeline.

Origin & How They Are Formed:

First observed by Allan Sandage in 1953 in the globular cluster M3, Blue Stragglers are formed when an older star gains extra hydrogen fuel, essentially resetting its nuclear clock through two primary mechanisms:

1. **Mass Transfer in Binary Systems (Roche Lobe Overflow):** In a close binary system, one star expands beyond its gravitational boundary (its *Roche lobe*) as it ages. Matter leaks from this donor star onto its smaller companion. Accreting this extra mass causes the companion to grow hotter, bluer, and more massive, spinning up rapidly as it transforms into a BSS.
2. **Stellar Collisions / Mergers:** In dense star cluster cores, direct physical collisions or mergers between two stars can fuse their mass into a single, highly energetic rejuvenated star.

Key Features of Blue Stragglers:

- **Defies Normal Stellar Ageing:** Blue Straggler Stars (BSS) appear **younger and hotter** than other stars in the same ancient cluster, even though they formed at the same time.
- **Semi-Detached Binary System:** In **TIC 327546480**, the smaller companion star continuously transfers gas to the larger Blue Straggler Star, causing it to gain mass.
- **High Rotation Due to Accretion:** As the BSS receives gas from its companion, it also gains angular momentum, making it spin much faster.
- **X-Ray Evidence of Mass Transfer:** The falling gas heats up when it strikes the BSS, producing **strong X-rays** that confirm active mass transfer.
- **Long-Term Rejuvenation:** Scientists estimate that this mass transfer began **about 5.46 billion years ago** and is still continuing, keeping the star looking young.

Significance:

- The discovery directly shows a Blue Straggler Star gaining mass from a companion, providing strong evidence that mass transfer can rejuvenate stars.
- The system helps scientists better understand binary star evolution, mass transfer, and stellar life cycles, improving models of how stars evolve across the universe.

GOBARDHAN (GALVANIZING ORGANIC BIO-AGRO RESOURCES DHAN)

The Union Cabinet approved GOBARDhan (Galvanizing Organic Bio-Agro Resources Dhan) – National Circular Bioenergy Scheme with a total financial outlay of ₹23,731 crore.

Cabinet Approves ₹23,731-Crore GOBARDhan Scheme
to Scale Up Compressed Biogas Production

Landmark national scheme to convert India's organic wealth into clean energy, rural prosperity and economic growth

- Outlay of ₹23,731 crore (FY 2026-27 to FY 2035-36)
- Assured offtake, stable pricing, capital assistance, pipeline connectivity and credit support
- Aims for nearly ten-fold growth in domestic CBG production
- Transforms agricultural residue, cattle dung, municipal waste into clean fuel and organic manure
- Boost to farmers, rural entrepreneurs and private investment
- Supports waste-to-wealth, Atmanirbhar Bharat and Viksit Bharat

SIX GROWTH ENGINES UNDER GOBARDhan

1. Assured CBG Offtake
2. Stable CBG Pricing Framework
3. Capital Assistance
4. Development of Pipeline Infrastructure
5. Credit Guarantee Support
6. CBG Ecosystem Challenge Fund

India's waste will fuel India's growth. India's villages will become centres of clean energy production. India's farmers will become partners in the nation's energy security.

Ministry of Petroleum and Natural Gas
Government of India

GOBARDhan
National Circular Bioenergy Scheme
Waste to Wealth
Clean Energy for a Stronger India

The GOBARDhan Initiative

About The GOBARdhan Initiative:

What It Is?

- GOBARdhan is an integrated national framework designed to unify the entire Compressed Biogas (CBG) value chain. It converts agricultural residues, cattle dung, press mud, municipal solid waste, and other organic biomass into clean fuel (CBG) and high-quality organic fertilizer (Fermented Organic Manure – FOM).

Nodal Ministry: Ministry of Petroleum and Natural Gas (MoPNG).

Implementation Horizon: 10-Year Period (FY 2026–27 to FY 2035–36).

Precursor Foundations Integrated: Consolidates earlier schemes like SATAT (Sustainable Alternative Towards Affordable Transportation), Market Development Assistance (MDA), Biomass Aggregation Machinery (BAM), and the National Bioenergy Programme into a single platform.

Aim: To establish CBG as a core pillar of India's green energy mix, expand domestic renewable gas production, attract large-scale private investment, build a rural circular bioeconomy, and reduce national dependence on imported fossil fuels (LNG).

Key Features:

- **Assured CBG Offtake Framework:** Establishes mandatory blending targets for City Gas Distribution (CGD) entities—3% in FY 2026–27, 4% in FY 2027–28, and 5% from FY 2028–29 onwards—creating guaranteed demand in transport (CNG) and domestic (PNG) segments.
- **Stable Administered Pricing Framework:** Introduces a government-backed, long-term administered CBG price of **₹2,110 per MMBTU** over a 10-year horizon to provide revenue certainty to plant operators.
- **Targeted Capital Assistance:** Provides financial assistance of up to **₹2 crore per Ton Per Day (TPD)** of installed CBG capacity for greenfield and brownfield projects, extending support to feedstock aggregation and organic manure processing assets.
- **Pipeline Infrastructure Support:** Supports cluster-based and standalone pipeline connections linking production units directly into City Gas Distribution networks and national gas grids.
- **Dedicated Credit Guarantee Mechanism:** Deploys a institutional credit guarantee scheme to reduce risk for lenders funding MSMEs, cooperatives, and rural entrepreneurs entering the CBG sector.
- **CBG Ecosystem Challenge Fund:** Sets up a dedicated fund to assist district-level mapping of biomass resources, technological innovation, capacity building, and value-addition of Fermented Organic Manure (FOM/LFOM).

Significance:

- Boosts domestic CBG production, reducing LNG imports, saving foreign exchange, and enhancing energy security.
- Creates income from crop residue and cattle dung while reducing stubble burning and producing organic manure.

Challenges

1. **Feedstock aggregation** – Scattered cattle dung and agricultural waste make regular collection difficult.
2. **High logistics cost** – Transportation of bulky biomass reduces the economic viability of plants.
3. **Financial viability** – High initial investment and uncertain returns discourage private participation.
4. **Technology & skill gaps** – Lack of trained personnel affects plant operation, maintenance and methane purification.
5. **Weak market linkages** – Limited demand/infrastructure for CBG and inadequate marketing of bio-slurry constrain profitability.

Way Forward

1. **Cluster-based plants** – Locate plants near livestock-dense areas and develop village-level collection centres to reduce logistics costs.
2. **Assured markets** – Strengthen long-term CBG offtake arrangements with oil and gas companies and expand gas-grid connectivity.
3. **Financial support** – Provide concessional finance, viability-gap funding and incentives to make projects commercially sustainable.
4. **Community participation** – Involve Panchayats, SHGs, FPOs and dairy cooperatives in feedstock collection and plant management.
5. **Circular economy integration** – Promote the cycle “dung → biogas/CBG → bio-slurry → agriculture”, creating additional income and reducing waste.

BITCHAT

The Indian Cyber Crime Coordination Centre (I4C), under the Ministry of Home Affairs, directed GitHub to remove three repositories hosting **BitChat**.



BitChat Repositories

About BitChat Repositories:

What It Is?

- BitChat is an open-source, decentralized, peer-to-peer (P2P) messaging application developed to operate completely without internet connectivity, cellular networks, or central servers. The repositories on GitHub host its source code and Android installation release files.

Conceived & Developed By: Conceived by Doris Lima and developed by Jack Dorsey (co-founder of Twitter/X and CEO of Block).

How It Works?

- **Device-to-Device Mesh Networking:** Uses **Bluetooth Low Energy (BLE)** to discover nearby devices (within ~30 to 100 meters). Each device acts as both a client and a relay node, hopping encrypted messages across a chain of smartphones until reaching the intended recipient.
- **Dual-Transport Layer:** Integrates local BLE mesh connections with the decentralized, internet-based **Nostr protocol** whenever global internet connectivity becomes available.

Key Features:

- **Complete Infrastructure Independence:** Functions seamlessly during total internet blackouts, natural disasters, or network throttling.
- **Zero Registration & Full Anonymity:** Does not require phone numbers, email addresses, central accounts, or mandatory user verification.

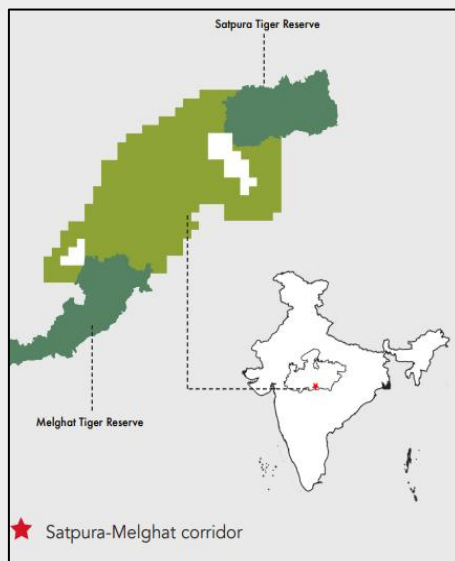
- **End-to-End Encryption:** Messages are secured using the Noise Protocol Framework, ensuring intermediate relay nodes cannot read or modify the payload.
- **Absence of Centralized Logs:** Operates without central servers, leaving no centralized communication logs or subscriber databases for law enforcement to subpoena.
- **Ephemeral Data & Panic Mode:** Features automated message deletion and quick data-wiping triggers to protect user data from physical seizure.

Implications:

- **Reduced Lawful Interception:** Lack of user verification and central logging makes subscriber identification and criminal investigations more difficult.
- **Bypassing Public Order Measures:** Mesh-based communication can facilitate coordination during internet shutdowns and evade lawful surveillance.
- **Due Process Concerns:** Critics contend that invoking **Section 79(3)(b)** instead of **Section 69A of the IT Act** bypasses procedural safeguards and judicial oversight established by *Shreya Singhal* and *Anuradha Bhasin*.

SATPURA-MELGHAT TIGER CORRIDOR

The Standing Committee of the National Board for Wildlife (SC-NBWL) granted in-principle clearance for a Central Railway third line project requiring over 200 hectares of forest land within the **Satpura-Melghat tiger corridor**.



The Satpura-Melghat Tiger Corridor

About The Satpura-Melghat Tiger Corridor: What It Is?

- The Satpura-Melghat Tiger Corridor is a crucial ecological land bridge covering approximately **7,325 square kilometers** of natural forest and agricultural landscape across Central India. It connects the core tiger populations of the **Satpura Tiger Reserve** in Madhya Pradesh with the **Melghat Tiger Reserve** in Maharashtra.

Geographic Location & Range:

- **States Covered:** Madhya Pradesh (Betul, Narmadapuram districts) and Maharashtra (Amravati district).
- **Landscape Network:** Connects key protected areas including Satpura National Park, Bori Sanctuary, Pachmarhi Sanctuary (in MP), and Gugamal National Park, Wan, Narnala, and Ambabarwa Sanctuaries (in Maharashtra).

Key Features:

- **High Natural Habitat Coverage:** Maintains over **60% natural habitat** area dominated by tropical dry to moist deciduous forests interspersed with local farmlands.
- **Key Focal Mammal & Avian Wildlife:** Serves as a vital movement zone for major carnivores and ungulates, including the **Tiger (*Panthera tigris*)**, **Leopard**, **Sloth Bear**, **Striped Hyena**, and the endangered **Forest Owlet**.
- **Indigenous Community Stewardship:** The landscape is inhabited predominantly by tribal communities (making up roughly **54% of the local population**), primarily from the **Korku and Gond** tribes.
- **Inter-Landscape Network Hub:** Links the broader Central Indian Tiger Landscape by forming critical physical connections with adjoining corridors, such as the **Satpura-Pench** and **Melghat-Bor** wildlife corridors.
- **Linear Infrastructure Pressure:** Exposed to high human modification indices due to expanding transportation networks—including railway line expansions (such as the Jujharpur-Chichonda section) and state highways.

Significance:

- Facilitates movement between isolated tiger reserves, preventing genetic inbreeding and allowing tiger and mammal populations to colonize new territories across Central India.
- Protects contiguous forest canopy across the Satpura and Gawilgarh hill ranges, helping preserve watershed security, prevent human-wildlife conflict, and maintain regional ecological balance.

LIST OF WORLD HERITAGE IN DANGER

At the 48th World Heritage Committee session in Busan, South Korea, UNESCO inscribed new cultural and natural sites on the World Heritage List and added six vulnerable sites to the List of World Heritage in Danger.



UNESCO's List of World Heritage in Danger

About UNESCO's List of World Heritage in Danger:**What It Is?**

- The **List of World Heritage in Danger** is an international conservation mechanism established under the 1972 World Heritage Convention.
- It highlights World Heritage properties threatened by severe risks—such as armed conflict, natural disasters, rapid urbanization, poaching, or pollution—enabling UNESCO to allocate emergency technical assistance, mobilize global conservation resources, and urge member states to take corrective action.

Six New Sites Added to UNESCO's List of World Heritage in Danger:

1. Inscribed on an Emergency Basis:

● Boma-Badingilo Migratory Landscape:

- **Location:** South Sudan
- **Key Features:** A vast East African savanna ecosystem that hosts the world's largest terrestrial mammal migration. It reflects rich cultural and herding traditions across diverse local ethnic groups.
- **Primary Threats:** Commercial poaching, wildlife trafficking, infrastructure development, persistent local insecurity, and limited institutional capacity.

● Mount Amel Castles:

- **Location:** Southern Lebanon
- **Key Features:** A network of five hilltop fortresses—including Beaufort, Toron, Dubieh, Maron, and Chama'—illustrating the evolution of regional defensive systems from the Crusades and Islamic dynasties through the 19th century.
- **Primary Threats:** Heavy damage and ongoing structural jeopardy caused by active regional military conflicts.

● Sebastia:

- **Location:** State of Palestine (near Nablus, West Bank)
- **Key Features:** Preserves continuous archaeological layers from the 9th century BCE (when Samaria-Sebaste was the capital of the northern Kingdom of Israel) through Hellenistic, Roman, Byzantine, Crusader, and Ottoman Throne Village periods.
- **Primary Threats:** Planned land expropriation for national park projects, conflict impacts, development pressure, and site erosion.

2. Inscribed Upon Committee Recommendation:

● Ancient City of Tauric Chersonese and its Chora:

- **Location:** Autonomous Republic of Crimea, Ukraine
- **Key Features:** An ancient Greek city and its agricultural hinterland(*Chora*) along the Black Sea coast.
- **Primary Threats:** Lack of state conservation oversight due to temporary Russian military occupation, coupled with integrity loss from unauthorized construction and unmonitored excavations.

● Historic Inner City of Paramaribo:

- **Location:** Suriname
- **Key Features:** A former Dutch colonial trading town featuring a distinct blend of European architecture and native South American materials.
- **Primary Threats:** Modern high-density construction projects (such as a new National Assembly hall and multi-story parking garage) built without heritage impact assessments, compromising its historic urban landscape.

● Tyre:

- **Location:** Lebanon
- **Key Features:** An ancient Phoenician island-city famed for its historic harbor, Roman hippodrome, and monumental ruins.
- **Primary Threats:** Direct structural jeopardy and potential destruction arising from ongoing regional armed hostilities.

WOMEN'S WORK PARTICIPATION IN INDIA

Economist highlights that India's economic objective of becoming a developed nation (Viksit Bharat) by 2047 cannot be achieved without structurally increasing women's work participation.



Women's Work Participation in India

About Women's Work Participation in India:

What it is?

- Women's work participation in India refers to the proportion of the female working-age population engaged in paid, productive employment across formal and informal sectors.
- Historically low by international standards, India's female Work Participation Rate (WPR) has experienced a U-shaped structural curve, declining as rural women withdrew from manual agricultural work without a corresponding absorption into formal non-farm or manufacturing jobs.

Key Data and Statistics on Women's Employment:

- **Growth Multiplier Potential:** A 10-percentage-point increase in India's female WPR could add nearly 2 percentage points directly to national GDP growth.
- **Rising Rate of Inactive Youth:** The number of young women (aged 15–29) neither looking for work nor in education grew from under 70 million prior to 2004 to over 100 million by 2018.
- **Distress-Driven Re-entry into Farms:** The post-2020 rise in female participation was largely driven by rural economic distress, forcing women into unpaid family labor (UFL) in agriculture.
- **North-South Industrial Disparity:** Tamil Nadu, possessing just 5%–6% of the national population, hosts over 40% of India's female factory workforce due to strong garment, electronics, and hostel infrastructure.

Reasons Behind Low and Distress-Driven Female Participation:

- **Capital-Intensive Economic Growth:** Recent GDP growth has concentrated in high-skill, capital-intensive sectors like finance and IT, which do not absorb large volumes of workers.
- **Decline of Labor-Intensive Manufacturing:** Key labor-absorbing sectors like textiles, food processing, and garments experienced absolute drops in employment between 2013 and 2019.
- **Mechanization and Agricultural Shift:** Farm mechanization reduced the demand for rural manual labor, while shrinking non-farm alternatives left educated young women without suitable jobs.
- **Social Norms and Safety Constraints:** Entrenched gender expectations, limited physical mobility, and a lack of safe housing and transport facilities restrict young women's entry into formal urban jobs.

Significance of Increasing Female Workforce Participation

- **Expanding Aggregate National Output:** Raising female participation increases the overall labor supply, expanding the economy's productive capacity and total economic output.
- **Boosting Household Incomes and Savings:** Transitioning women into paid employment directly increases household earnings, stimulating consumer demand and private savings.
- **Intergenerational Human Capital Gains:** Higher female earnings translate directly into improved child nutrition, health, and educational attainment, building long-term national human capital.
- **Enhancing Workplace Productivity and Innovation:** Gender-diverse workforce environments increase workplace efficiency, creativity, and competitive capability across industries.

Way Forward:

- **Targeting Labor-Intensive Industrial Policy:** Provide direct policy support to labor-absorbing sectors like garments, footwear, food processing, and light electronics assembly.
- **Replicating Women-Enabling Infrastructure:** Expand female literacy, dedicated working-women hostels, and safe public transportation networks modeled on Tamil Nadu's industrial clusters.
- **Investing in Public Health and Basic Education:** Direct state investments into healthcare and universal public education across Hindi-belt states to eliminate high malnutrition and stunting rates.
- **Transitioning Women Out of Unpaid Agriculture:** Create formal, non-farm wage employment opportunities to shift rural women away from unremunerated family farm labor.

Conclusion:

India cannot achieve its vision of becoming a developed nation (*Viksit Bharat*) while excluding half of its population from formal, productive work. Addressing the ongoing job crisis requires shifting economic policy toward labor-intensive manufacturing and providing supportive social infrastructure for women workers. Ultimately, enabling educated young women to move from unpaid domestic roles into formal employment will serve as the single strongest engine for sustained, long-term national growth.

DR. M.S. SWAMINATHAN AWARD FOR ENVIRONMENT PROTECTION

Two grassroots women changemakers – **P. Pechiyammal** and **Govindhammal** were honored with the Dr. M.S. Swaminathan Award for Environment Protection 2026 at an event in Chennai.



Dr. M.S. Swaminathan Award for Environment Protection 2026

About Dr. M.S. Swaminathan Award for Environment Protection 2026:
What It Is?

- The Dr. M.S. Swaminathan Award for Environment Protection is a national recognition awarded to grassroots individuals, community champions, or organizations for outstanding contributions to environmental preservation, coastal plastic cleanup, biodiversity protection, and sustainable agriculture.

Instituted / Supported By: M.S. Swaminathan Research Foundation (MSSRF) in partnership with CavinKare Pvt. Ltd. and the Rotary Club of Madras East (RI District 3234).

Aim: To recognize, honor, and encourage grassroots leaders working tirelessly to preserve natural ecosystems, clean up marine pollution, promote climate-resilient farming, and strike a balance between developmental growth and ecological conservation.

Eligibility:

- **Grassroots Champions & Organizations:** Open to individuals, local community workers, smallholder farmers, fisherfolk, and non-governmental entities operating across India.
- **Impactful Environmental Contribution:** Candidates must demonstrate tangible, measurable improvements in areas such as marine waste management, sustainable farming, seed preservation, or biodiversity restoration.

Key Features of the Award:

- **Focus on Unsung Community Leaders:** Recognizes grassroots conservation champions such as small farmers and fisherwomen whose local actions protect ecosystems despite climate and livelihood challenges.
- **Dual Scope (Terrestrial & Marine Protection):** Covers both marine conservation, such as ghost-net removal and beach clean-ups, and sustainable land practices like water-efficient farming and FPO-led agriculture.
- **Multi-Stakeholder Collaboration:** Brings together scientific expertise (MSSRF), corporate CSR support (CavinKare), and community outreach (Rotary Club) to strengthen conservation efforts.
- **Promotion of the Evergreen Revolution:** Rewards initiatives that reflect Dr. M.S. Swaminathan's vision of increasing agricultural productivity while conserving natural resources and biodiversity.
- **Community-Centric Inclusion:** Encourages marginalized rural communities to form collectives such as FPOs, improving livelihoods while promoting sustainable resource management.

Their contributions:

- **Pechiyammal (Ramanathapuram, Tamil Nadu)**

Field: Marine Conservation & Ocean Plastic Management

- Led community efforts to remove abandoned fishing nets from coastal waters and shorelines.
- Helped protect coral reefs, turtles, and fish by reducing ghost-net entanglement.
- **Govindhammal (Villupuram, Tamil Nadu)**

Field: Sustainable & Climate-Resilient Agriculture

- Promoted organic farming, soil health, and climate-resilient agricultural practices.
- Strengthened Farmer Producer Companies to improve farmers' bargaining power.

HOUBARA BUSTARDS

In a major cross-border conservation milestone, Uzbekistan, Kazakhstan, and the UAE released 672 captive-bred **Houbara Bustards**(*Chlamydotis macqueenii*) into Karakalpakstan's Aral Sea region.



The Houbara Bustard

About The Houbara Bustard:

What It Is?

- The Houbara Bustard (specifically the Asian Houbara or MacQueen's bustard, *Chlamydotis macqueenii*) is a medium-to-large, ground-dwelling migratory bird belonging to the bustard family (*Otididae*). It is renowned for its elusive nature and specialized adaptation to hyper-arid desert environments.

Natural Habitat: Thrives in arid and semi-arid landscapes, including sandy and stony deserts, gravel plains, dry steppes, and open shrublands across Central Asia, the Middle East, North Africa, and parts of South Asia (such as the Thar Desert and Rann of Kutch).

Conservation Status:

- IUCN Red List: Vulnerable
- CITES: Appendix I (Strictly prohibiting international commercial trade)
- Convention on Migratory Species (CMS): Appendix I (Requires strict protection across migratory corridors)

Key Characteristics:

- **Cryptic Camouflage:** Features sandy-brown, mottled upperparts and a pale underbelly, providing near-perfect visual camouflage against desert soils and dry bushes.
- **Ground-Preferring Locomotion:** Possesses strong legs adapted for walking long distances and running swiftly across rough terrain, resorting to flight primarily when directly threatened.
- **Dramatic Courtship Displays:** Males perform elaborate mating displays by erecting black-and-white neck ruffs, inflating throat sacs, and running in measured circular patterns to attract females.
- **Opportunistic Omnivore:** Sustains itself in moisture-scarce environments by eating desert seeds, plant shoots, insects (such as beetles and locusts), small lizards, and invertebrates.
- **Transboundary Migratory Trajectory:** Northern populations (from Kazakhstan and Uzbekistan) undertake long-distance seasonal migrations southwards to wintering grounds in Pakistan, India, and the Arabian Peninsula.

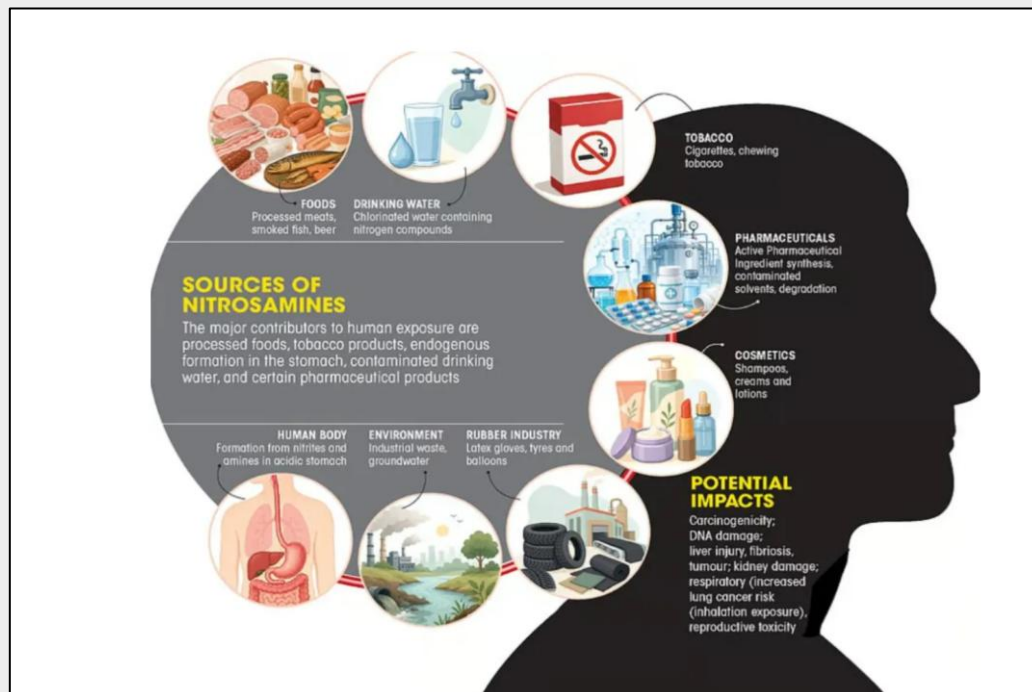
Significance:

- **Flagship Conservation Species:** Protecting the Houbara Bustard conserves vast desert ecosystems and associated wildlife.
- **Model for Cross-Border Conservation:** Demonstrates how international cooperation, biofinancing, and captive breeding can restore degraded ecosystems.

NITROSAMINES

Recently, it was observed that packaged foods, pharmaceuticals, industrial products and global supply chains contain chemicals known as nitrosamines.

About Nitrosamines



Nitrosamines are organic compounds that contain alkyl and an aryl group with the following nitrogen and oxygen group: $\text{N}-\text{N}=\text{O}$.

It is formally named N-nitrosamines.

Formation

These compounds get formed when amines react with nitrites or nitrates (often found in preservatives, food additives or environmental sources) under specific conditions, such as acidic environment, heat and presence of oxidising agents.

Formation of nitrosamine in foods occurs either during preparation or storage, or in the stomach.

The concentration of nitrosamines tends to increase over time, and their formation is enhanced by high temperatures.

Human exposure to Nitrosamines

It can be through ingestion, inhalation and dermal contact.

The other major sources of nitrosamines are contaminated water, pharmaceuticals and tobacco products. (One of the most concerning nitrosamines in water is NDMA (N nitrosodimethylamine)).

Impact on Human Health: These compounds have been linked to potential health risks, including cancer, even at very low concentrations over long-term exposure.

DHIMSA DANCE LATEST NEWS

A recent performance of the traditional Dhimsa dance by more than 13,000 tribal women and girl students at the Alluri Sitarama Raju International Airport in Bhogapuram was recognised by Guinness World Records as the “largest Dhimsa dance”.

About Dhimsa Dance



It is a popular tribal dance performed by tribes, including Bagata, Valmiki, Poraja, Khond, Gadaba, Kondadora, Mukadora, and Kotia in Andhra Pradesh .

It is performed during festivals, weddings, and at the time of the “hunting festival” in April when men and women dance for hours together.

There are 12 varieties of Dhimsa and the origin can be traced to the Koraput area, the home of the Ghond Tribe.

Performance:

Typically performed by a group of 15 to 20 women dressed in traditional, colorful ethnic sarees and ornaments, the dancers move in synchronous circles to the rhythm of native instruments played by male community members.

The beauty of this dance centres on the movements of the dancers without much emphasis on expression or literary texts.

The feet and the hand movements dominate the dance.

It is accompanied by wind and percussion instruments; the dance changes with the music.

Unique tribal musical instruments accompanying this dance form include the Mori (a wind instrument), Thudum (drum), and Dappu.

Themes: Various themes of the Dhimsa, are woven around their mythologies, folktales, ethos, mores, economic activities, and kinship and marital life, etc.

DANUBE RIVER

Water levels in Europe's **Danube River** dropped to record-low levels across several countries—including Hungary, Slovakia, Romania, and Bulgaria—due to severe, prolonged summer heatwaves and drought across the continent.



The Danube River

About The Danube River:

What It Is?

- The Danube is **Europe's second-longest river** (after Russia's Volga River) and one of the world's most international river basins. Stretching approximately **2,850 kilometers (1,770 miles)**, it serves as a critical economic artery, freshwater source, natural boundary, and ecological corridor linking Central and Southeastern Europe to the Black Sea.

Location & Origin:

- **Origin / Source:** Rises in the **Black Forest mountains** of western Germany at the confluence of two small mountain streams: the *Breg* and the *Brigach*.
- **Mouth:** Drains into the **Black Sea** via the UNESCO-protected **Danube Delta** in Romania and Ukraine.

Nations It Flows Through (10 Countries): The main river course flows through or forms the borders of **10 European nations**: Germany, Austria, Slovakia, Hungary, Croatia, Serbia, Bulgaria, Romania, Moldova, and Ukraine.

Key Features:

- **Three Geographical Sections:** Divided into the **Upper Danube** (mountainous, fast-flowing Alpine course), **Middle Danube** (flatland course traversing the Hungarian Plains and the scenic Iron Gate gorge), and **Lower Danube** (broad, marshy plain leading to the Black Sea).
- **Dense Tributary Network:** Supported by more than 300 tributaries (over 30 of which are navigable), including major rivers like the **Inn, Drava, Sava, Tisza, Prut, and Siret**.
- **Connects Four European Capitals:** The Danube is unique in flowing directly through or bounding four national capital cities: **Vienna** (Austria), **Bratislava** (Slovakia), **Budapest** (Hungary), and **Belgrade** (Serbia).
- **Vast Biosphere Delta:** The **Danube Delta** covers approximately 4,300 square kilometers across Romania and Ukraine, forming one of Europe's largest wetland ecosystems and a vital habitat for migratory birds and aquatic species.
- **Key Engineering Structures:** Features major navigation channels, reservoirs, and hydroelectric projects—most notably the **Iron Gate I & II dams** (between Serbia and Romania) and the **Gabcikovo Dam** (Slovakia).

ARCTIC COUNCIL

Recently, the Parliamentary committee on External Affairs has recommended that India should appoint a Polar Ambassador and urged the government to seek “full-fledged membership” of the Arctic council.

About Arctic Council



It was established by the Ottawa Declaration in 1996.

It is an intergovernmental forum for addressing issues related to the Arctic Region.

It is not a treaty-based international organization but rather an international forum that operates on the basis of consensus, echoing the peaceful and cooperative nature of the Arctic Region.

Member Countries: Canada, Denmark, Finland, Iceland, Norway, Sweden, the Russian Federation, and the United States

It has six Permanent Participants (PP) groups representing the indigenous people of the Arctic.

Observer States: Observer status in the Arctic Council is open to non-arctic states, inter-governmental and inter-parliamentary organizations, global and regional and non-governmental organizations.

India is currently one of the 13 observer countries (France, Germany, Netherlands, Poland, Spain, U.K., India, China, Japan, Singapore, South Korea, Italy and Switzerland) of the Arctic Council.

The observer countries do not have decision making powers. They also can't make financial contributions or undertake research in the arctic directly.

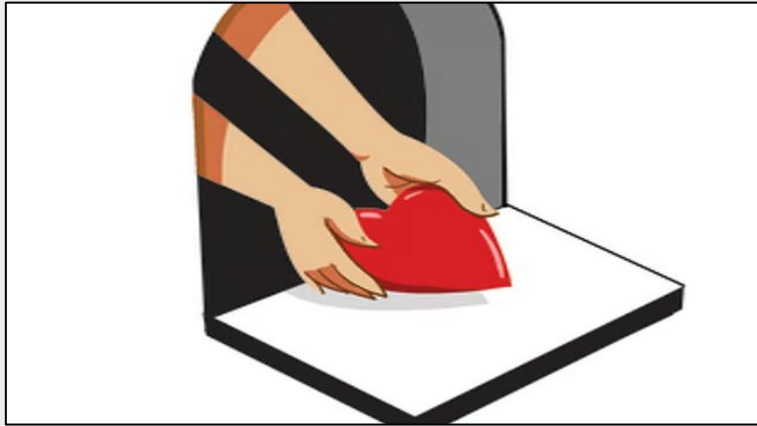
Function: The Council focuses its work on matters related to sustainable development, the environment, and scientific cooperation.

Traditionally, the Council is chaired by the foreign minister of the country holding the chairmanship.

ORGAN TRANSPLANTATION IN INDIA

India recorded a record 20,138 organ transplants in 2025, the highest ever in a single year, with Tamil Nadu leading in deceased organ donations.

- The NOTTO Annual Report 2025-26 also highlighted sustained growth in transplantation and launched new initiatives to strengthen organ donation nationwide.



Organ Donation in India

About Organ Donation in India:

What It Is?

- Organ donation is the voluntary donation of organs or tissues by a **living or deceased donor** for transplantation to patients suffering from end-stage organ failure.
- In India, organ donation and transplantation are regulated under the Transplantation of Human Organs and Tissues Act (THOTA), 1994, with the National Organ and Tissue Transplant Organisation (NOTTO) serving as the apex coordinating body.

Key Findings:

- **Record Transplants:** India performed 20,138 organ transplants in 2025, the highest ever, up from 18,911 in 2024 and 4,990 in 2013.
- **Tamil Nadu Leads:** Tamil Nadu recorded the highest deceased organ donors (266) and ranked second in total transplants (2,796) after Delhi.
- **Deceased Donation Growth:** Deceased donor transplants increased more than fourfold – from 837 (2013) to 3,526 (2025).
- **Kidney Dominates:** Kidney transplants accounted for 62% of all transplants, followed by liver transplants (20%).
- **Digital & Policy Push:** India crossed 5 lakh Aadhaar-verified organ donation pledges, while launching the Jug Jug Jiyo Abhiyaan, NOTTO Mobile App, and new Brain Stem Death and Swap Transplantation Guidelines.

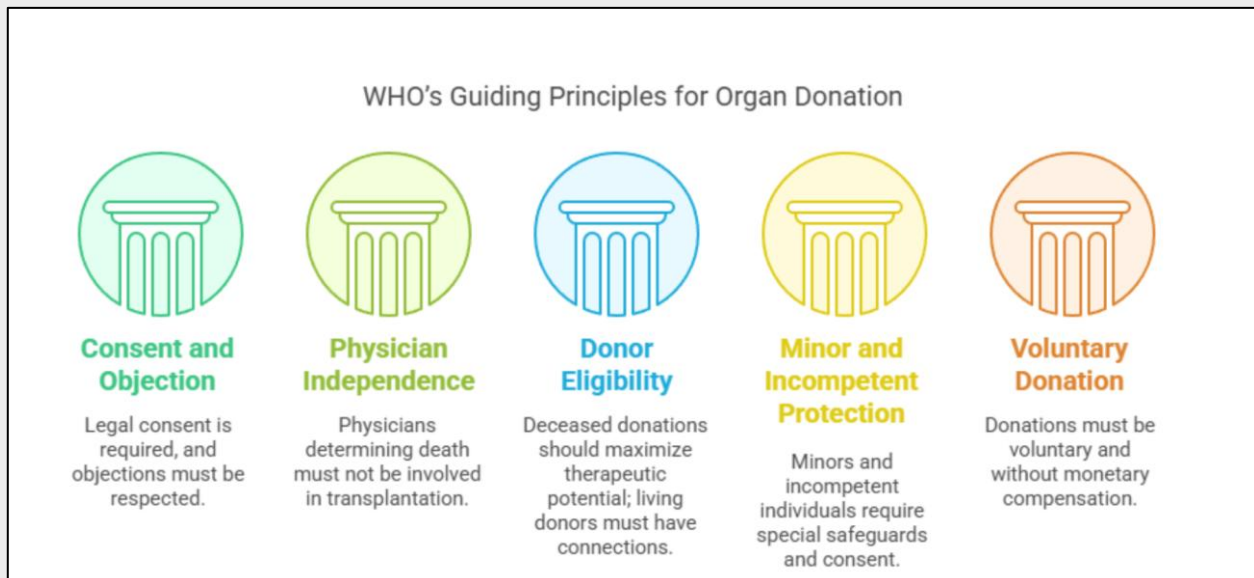
Significance:

- **Improves Healthcare Outcomes:** Expands access to life-saving transplants, reducing deaths from end-stage organ failure.
- **Strengthens Health Governance:** Digital platforms, standardized guidelines, and awareness campaigns improve transparency, efficiency, and public trust.
- **Promotes Humanitarian Values:** Encourages voluntary donation, giving a single deceased donor the potential to **save up to eight lives**.

What are the Gaps in India's Organ Transplantation Programme?

- **Infrastructural Deficiencies:** Many government hospitals lack dedicated infrastructure for organ retrieval and transplantation, and face a severe shortage of ICU beds crucial for maintaining brain-stem dead (BSD) donors and post-operative care.

- **Operation theatres (OTs) and ICUs are overburdened** with general patient loads, while several centres, including some **AIIMS branches**, lack in-house Human Leukocyte Antigen (HLA) cross-matching labs, causing delays.
- **Shortage of Skilled Transplant Professionals:** Government hospitals face a critical shortage of trained transplant surgeons, nephrologists, urologists, anaesthetists, neurologists, neurosurgeons, and intensivists.
 - **Frequent transfers, absence of dedicated teams, and lack of incentives** for transplant staff disrupt continuity, lower motivation, and hinder the expansion of organ transplantation.
- **Procedural Bottlenecks:** Delays in approval and formation of **Brain-Stem Dead (BSD) Committees**, essential for **deceased organ donation**, remain a major hurdle.
 - **Cumbersome handling of medico-legal cases**, especially involving **trauma patients**, and the absence of a **streamlined process** contribute to significant **procedural delays** and discourage **organ donation**.
- **Financial Strain:** **Insufficient funding** blocks the initiation or revival of specialised programmes like **lung transplantation**, while the **high cost of immunosuppressant drugs** imposes a heavy burden, as most schemes cover only the **first year** of medication.
 - **Liver and heart transplants** and their **lifelong follow-up costs** are excluded from major health schemes like **Ayushman Bharat**, limiting access for **poor patients**.
- **Peri-Transplant Donor Tissue Damage:** **Aging and diseases** reduce donor organ quality, leading to **Ischemia-Reperfusion Injury (IRI)**. Many organs are discarded due to **inferior quality**, impacting **transplant success rates**.
- **Chronic Rejection in Organ Transplantation:** **Long-term survival rates** for transplanted organs have not significantly improved over the past **20 years**. Current **anti-rejection therapies** remain largely unchanged, with only **modest improvements** in survival rates.
- **Access and Awareness Gaps:** India's organ transplantation programme is challenged by the **dominance of the private sector**, limiting affordable access for **poor patients**; the **absence of green corridors** hampers **swift organ transport**; and **low awareness**, along with **misconceptions** about organ donation, discourage public participation.
- **Ethical and Legal Challenges:** **Organ trafficking, commercialisation of organ donation**, and a **black market for organs** persist despite strict laws like the **Transplantation of Human Organs and Tissues Act, 1994 (THOT Act, 1994)**.
 - **Consent issues in brain-death certification** and **criminal activities exploiting organ demand** undermine **legitimate donation processes**.



What Strategies can be Adopted to Enhance the Organ Transplantation Framework in India?

- **Enhancing Infrastructure:** Upgrade ICU and transplant facilities in government hospitals with dedicated Transplant ICUs (TICUs) and operation theatres, adopt advanced preservation technology like hypothermic/normothermic machine perfusion, and standardize organ procurement and transport protocols to reduce delays and wastage.
 - Fast-track BSD committee approvals through digital systems and trained personnel, and simplify medico-legal procedures for trauma cases to enable timely organ retrieval.
- **Financial Support and Policy Reforms:** Include liver and heart transplants under Ayushman Bharat, covering lifelong immunosuppressant costs, along with increased funding for transplant programs in government hospitals, especially for costly procedures like lung transplants.
 - Provide a subsidy for immunosuppressant drugs and performance-linked incentives for transplant teams to reduce patient burden and boost motivation.
- **Addressing Manpower Shortages:** Adopt recruitment and retention policies for transplant specialists (including surgeons, nephrologists, intensivists) and reduce frequent transfers to ensure program continuity.
 - Specialized training programs for organ retrieval, transplantation, and post-op care, with collaborations with AIIMS and medical colleges to expand transplant education.
- **Promoting Research and Ethical Practices:** Invest in bioengineered organs, xenotransplantation, and AI-driven organ matching, while developing ethical guidelines for equitable organ allocation and transparent consent processes.
 - Promote public-private partnerships to drive innovation in transplant technology.

- **Emphasising Broader Benefits:** A robust organ and tissue transplant ecosystem can boost **medical tourism**, enhance **India's soft power**, promote **inter-state coordination** through efficient sharing networks, and strengthen the **health budget** by generating revenue and reducing long-term healthcare costs.
- **Strengthening Public Awareness:** Launch **nationwide awareness campaigns** using **social media**, **TV**, and **celebrity endorsements**, along with **school and college education**, **community engagement** with **survivor and donor family testimonials**, and partnerships with **religious leaders** to promote **organ donation** and dispel **myths**.
 - Introduce **public recognition initiatives** like **certificates**, **plaques**, and **memorials** to honour **donors** and encourage greater **participation**.

Conclusion

India's organ transplantation crisis demands urgent reforms—boosting infrastructure, funding, and awareness while addressing ethical and procedural gaps. Expanding Ayushman Bharat coverage, incentivizing specialists, and leveraging technology can bridge the demand-supply gap. A multi-stakeholder approach is vital to save lives and build an efficient, ethical transplant ecosystem.

■ CLOUDED LEOPARD CONSERVATION ACTION PLAN (CAP)

On International Clouded Leopard Day Aug 4, India's Ministry of Environment, Forest and Climate Change launched the Clouded Leopard Conservation Action Plan (CAP).



The Clouded Leopard Conservation Action Plan (CAP)

About The Clouded Leopard Conservation Action Plan (CAP):

What It Is?

- The Clouded Leopard CAP is a comprehensive, multi-state strategic framework formulated to secure habitats, restore ecological corridors, standardize population assessments, and empower local communities for the long-term survival of the species in India.

Aim: To halt population decline, protect critical forest landscapes across Northeast India, establish reliable population baselines through advanced science, and mitigate human-wildlife conflicts outside formal protected areas.

Key Features of the Conservation Action Plan:

- **Identification of 14 Priority Landscapes:** Delineates 14 critical conservation landscapes across the Northeast (Assam, Arunachal Pradesh, Meghalaya, Nagaland, Mizoram, Manipur, Tripura) and northern fringes of West Bengal and Bihar.
- **Standardized Scientific Monitoring:** Mandates non-invasive technology—including environmental DNA (eDNA), camera traps, genetic sampling, and occupancy surveys—to establish India's first reliable population baseline.
- **Habitat & Corridor Connectivity:** Focuses on restoring degraded forest corridors outside conventional National Parks and Sanctuaries to reconnect isolated breeding populations.
- **Community-Centric Conservation:** Involves local indigenous communities in anti-poaching monitoring while delivering sustainable livelihood alternatives to reduce forest dependence.
- **Transboundary Collaboration:** Promotes cross-border conservation initiatives with neighboring range countries (such as Bhutan, Myanmar, and Nepal) to enable safe wildlife migration across international borders.

About the Clouded Leopard:

What It Is?

- The Clouded Leopard (*Neofelis nebulosa*) is an evolutionary ancient, medium-sized wild cat species that bridges the gap between big (*Panthera*) and small (*Felinae*) cats. Molecular research suggests it branched from the *Pantherinae* lineage over 6 million years ago, making it one of the most ancient living feline species.

Habitat & Geographic Range:

- **Geographic Distribution:** Found from Nepal, Bhutan, Bangladesh, and Northeast India through Southeast Asia (Indochina, Sumatra, Borneo) to southern China.
- **Habitat Preferences:** Prefers lowland dense tropical rainforests, but adapts to dry woodlands, mangrove swamps (in Borneo), and foothill forests of the Himalayas up to elevations of 2,743 meters (9,000 feet).

Conservation & Legal Status:

- **IUCN Red List Status:** Vulnerable.
- **Wildlife Protection Act (WPA), 1972 (India):** Listed under **Schedule I**.

Key Biological & Morphological Features:

- **Exceptional Canine-to-Skull Ratio:** Possesses the longest canine teeth relative to skull size of any living wild cat species, earning it the nickname "modern-day saber-tooth."
- **Arboreal Adaptations:** Features flexible, specialized ankle joints that rotate backward, allowing it to climb down tree trunks headfirst, supported by large dexterous paws and a long tail used for balance.
- **Vocal Structures:** Lacks the fully ossified hyoid bone required for roaring (unlike lions or tigers), but cannot purr continuously like small cats; its vocalizations consist of growls, hisses, and chuffs.
- **Distinctive Coat Markings:** The fur ranges from brownish to pale yellowish-gray, covered with large, irregular dark blotches edged in black resembling storm clouds.

Climate Change: Driving Wildlife Towards Extinction

[Muhammad Yasir]

Climate change has emerged as one of the greatest threats to global biodiversity, pushing countless wildlife species towards extinction. Rising temperatures, changing rainfall patterns, melting glaciers, rising sea levels, and frequent extreme weather events are disrupting ecosystems that have evolved over millions of years. As habitats disappear and food sources become scarce, many species struggle to survive, making climate change a major driver of the ongoing biodiversity crisis.

According to the Intergovernmental Panel on Climate Change (IPCC), approximately 20–30% of plant and animal species are at an increased risk of extinction if global warming exceeds 1.5°C to 2°C above pre-industrial levels. Scientists estimate that the Earth has already warmed by about 1.3°C, and the impacts are becoming increasingly visible across ecosystems. The World Wildlife Fund (WWF) reports that wildlife populations have declined by an average of 73% since 1970, with climate change acting alongside habitat destruction, pollution, and overexploitation to accelerate biodiversity loss.



The Arctic provides one of the clearest examples of climate change's impact. Rapid melting of sea ice threatens polar bears, seals, and walrus that depend on ice for hunting and breeding. Coral reefs are another major casualty. The National Oceanic and Atmospheric Administration (NOAA) notes that repeated marine heatwaves have caused widespread coral bleaching, with the 2023–2025 global coral bleaching event affecting reefs across the Atlantic, Pacific, and Indian Oceans. Since coral reefs support nearly 25% of all marine species, their decline places thousands of fish and other marine organisms at risk.

Climate change is also altering migration patterns and breeding cycles. Many birds arrive at breeding grounds after peak food availability has passed, reducing reproductive success. Amphibians, already highly sensitive to environmental changes, face increasing threats from droughts and warming temperatures. Mountain species, such as the snow leopard and alpine plants, are losing suitable habitats as temperatures rise, leaving them with nowhere higher to migrate.

Protecting wildlife requires urgent global action. Reducing greenhouse gas emissions, restoring forests and wetlands, expanding protected areas, and promoting sustainable land use are essential steps to safeguard biodiversity. International cooperation through agreements such as the Paris Agreement, along with strong national conservation policies, can help slow climate change and protect vulnerable species.

Climate change is not merely an environmental issue but a survival challenge for Earth's wildlife. The decisions humanity makes today will determine whether future generations inherit a planet rich in biodiversity or one marked by irreversible extinctions. Conserving wildlife is therefore not only a moral responsibility but also essential for maintaining healthy ecosystems that sustain all life on Earth.

Redefining the airspace: Centre sounds alert on evolving rogue drone threats along borders

[Arun Sasi]

Pointing to structural vulnerabilities exposed in global flashpoints, the Ministry of Home Affairs mandates an integrated technological shield to protect critical border installations and national assets.

The Union Government has issued a comprehensive security advisory warning of heightened risk from "rogue" uncrewed aerial systems (UAS) targeting Vital Assets and Vital Installations (VAVIs) along India's sensitive border regions. Driven by the rapidly evolving tactics witnessed in global hotspots like Ukraine and West Asia, the Ministry of Home Affairs (MHA) has directed a multi-agency mobilization to accelerate the deployment of advanced, multi-layered counter-drone technology.



The security mandate initiates a coordinated operational framework linking the Border Security Force (BSF), Central Industrial Security Force (CISF), Defence Research and Development Organisation (DRDO), Intelligence Bureau (IB), and the Airports Authority of India (AAI). The objective is to shift national asset protection from a traditional, 2D perimeter-fence model into an integrated, 3D airspace defence system.

The Asymmetric Paradigm Shift

According to defence analysts, the warning marks a domestic reckoning with the paradigm shifts in modern warfare, characterized by the democratization of precision-strike weapons.

Low Barrier to Entry: Commercially available First-Person View (FPV) quadcopters, modified to function as low-cost "kamikaze" or loitering munitions, allow state and non-state adversaries to bypass sophisticated traditional air defences.

- **Electronic Resilience:** The emergence of fibre-optic guided and autonomous, electronic warfare (EW)-resistant uncrewed platforms has steadily reduced the effectiveness of conventional radio-frequency jamming and GPS spoofing.
- **Sub-Radar Operations:** Operating at low altitudes and featuring minimal radar cross-sections, these rogue drones present significant detection challenges to legacy monitoring infrastructure, enabling stealthy smuggling of narcotics, counterfeit currency, and specialized weapons across international borders.

India's Strategic Response and Procurement Landscape

In response to these gaps, India's defence establishment has initiated several fast-tracked counter-measures and multi-billion dollar procurements to build domestic capabilities.

1. Establishing the Tactical UAS RoadMap: Strategic Framework.

The Indian Army has instituted a comprehensive Technology Roadmap for Unmanned Aerial Systems, mapping technical requirements for 30 distinct uncrewed platforms spanning roughly 80 design variants to guide domestic defence manufacturers.

2. Executing High-Altitude Acquisitions: Procurement Phase.

The defence ministry cleared a ₹32,350 crore program to acquire 87 Medium Altitude Long Endurance (MALE) drones. This integrates immediate foreign capabilities—such as the American MQ-9B Predator platforms—while indigenous systems like the DRDO TAPAS-BH-201 complete rigorous field testing.

3. Targeting the Electronic Warfare Gap: R&D Allocation via iDEX.

Under the ADITI scheme and Innovations for Defence Excellence (iDEX), the military has launched specialized R&D challenges. A core focus includes developing terminal-guidance AI software enabling drones to identify and engage targets autonomously even under total GPS and radio-frequency denial.

4. Deploying 'Mission Sudarshan Chakra': National Shield Integration (Target 2035).

The long-term objective remains the maturation of an AI-driven multi-domain defence matrix. The system aims to pair hard-kill mechanisms (directed-energy lasers and close-in weapon systems) with soft-kill protocols to disable massed swarm attacks without exhausting expensive missile stockpiles.

Hard-Kill and Soft-Kill Integration

Securing civilian installations has already begun to mirror these military doctrines. The V.O. Chidambaranar Port Authority in Thoothukudi, Tamil Nadu, recently became the first major Indian port asset to initiate the deployment of an advanced commercial anti-drone system, setting a precedent for industrial hubs, refineries, and nuclear facilities nationwide.

Security officials emphasize that a standard response mechanism cannot rely on uniform tactics. A layered approach requires radio frequency (RF) scanners and electro-optical trackers for initial detection, followed by an automated assessment to determine whether a threat warrants an electronic "soft kill" (taking control of the command link) or a kinetic "hard kill" (destruction via localized physical countermeasures).

"The core challenge lies in scale and economic asymmetry," observed a senior homeland security official. "When a rogue asset costs less than a consumer smartphone, the counter-defence architecture must be sustainable, autonomous, and capable of functioning across contested electromagnetic environments without relying on millions of dollars in defensive ammunition."

Article III

Free Trade Agreements (Ftas)

[Arun Payyanur]

India has steadily expanded its network of free trade agreements over the past few years reaching Nine FTAs spanning 38 countries. Starting with India-Mauritius in 2021, the India-UAE Comprehensive Economic partnership agreement followed in May 2022. India-Australia Economic and Trade Agreement was implemented in December 2022. India then signed the EFTA TEPA on 10th March 2024, which entered into force on 1st October 2025. The India-UK CETA was signed in July 2025 and India-Oman CEPA in December 2025. The India-New Zealand FTA was announced on 22nd December 2025, followed by the India-EU FTA on 27th January 2026.

Free Trade Agreements (FTA)

A Free Trade Agreement (FTA) is a legally enforceable arrangement between two or more countries to establish a free trade area. Under such an agreement, the participating nations provide more favourable market access to each other's goods and services than they offer to products and services originating from non-member countries.

The core objective of an FTA is to remove or significantly reduce barriers that restrict international trade. The two most important barriers addressed are:

1. Tariffs (Import Duties):

The primary feature of any FTA is the reduction or complete abolition of customs duties imposed on imports from partner countries. By lowering these import taxes, member countries make each other's products more affordable and competitive in their domestic markets.

Example: Suppose India signs an FTA with Country X. If Country X usually levies a 10% import duty on foreign-made cars, the agreement may reduce this duty to zero for automobiles manufactured in India. As a result, Indian cars become less expensive and gain a stronger competitive position in Country X's market.

2. Quotas:

FTAs also seek to eliminate or substantially relax quantitative restrictions on imports. In other words, limits on the amount of particular goods that can be imported from partner countries are either removed altogether or increased significantly, allowing greater trade between the member nations.

Modern trade agreements (often called CEPA or CECA, like India uses) go far beyond just goods.

Example: CEPA – Comprehensive Economic Partnership Agreement

CACA – Comprehensive Economic Cooperation Agreement

In short, both CECA and CEPA are terms India uses to signify a trade agreement that is much wider in scope than a simple FTA that only deals with merchandise trade.

CEPA or CECA Includes	
Component	Explanation
Trade in Services	Making it easier for services like IT, finance, healthcare, and professional services to be supplied across borders.
Investment	Establishing rules and protections for companies from one country that invest in the partner country.
Intellectual Property	Agreeing on shared standards for protecting patents, trademarks, and copyrights.
Rules of Origin (ROO)	These are crucial. They define which goods genuinely "originate" in a partner country to qualify for the low/zero FTA tariff, preventing non-member countries from simply shipping their goods through the partner country to gain the benefit.
Dispute Settlement	Setting up a formal mechanism to resolve disagreements over the interpretation or implementation of the agreement.

Benefits of FTA

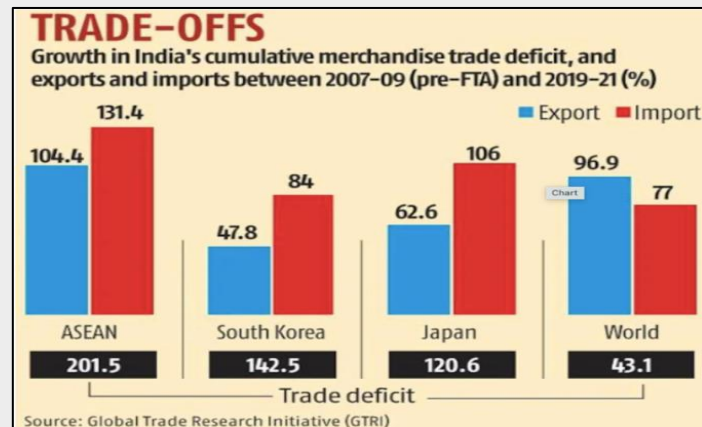
- Economic Growth: By removing tariffs, trade volume increases, which can boost exports, manufacturing, and overall economic activity.
- Lower Prices & Greater Choice: Consumers benefit from a wider variety of imported goods at lower prices due to reduced taxes.
- Increased Competition: Domestic companies must become more efficient and innovative to compete with cheaper, tariff-free imports.
- Better Market Access: FTAs provide businesses with stable, preferential access to a larger pool of international customers.

India's Free Trade Agreements (2025-26)

Sl. No.	Name of the Agreement	Date of Signing of the Agreement	Date of Implementation of the Agreement
1.	India – United States of America (USA) framework for an interim Agreement	Announced on Feb 2, 2026	
2.	India – The European Union (EU) FTA	Announced on Jan 27, 2026	
3.	India -New Zealand FTA	Announced on Dec 22, 2025	
4.	India – Oman Comprehensive Economic Partnership Agreement (CEPA)	18 th December 2025	To be implemented after completion of ratification process by India and the Oman.
5.	India – UK Comprehensive Economic and Trade Agreement (CETA)	24 th July 2025	To be implemented after completion of ratification process by India and the UK.

Challenges associated with Free Trade Agreements (FTAs) for India

- **Rising Trade Deficits:** India's trade deficits with several FTA partners have grown sharply after implementation (eg: ASEAN, South Korea, Japan etc). In FY 2025, imports from newer FTA partners far exceeded exports, resulting in a trade deficit of over \$50 billion.



- **Unequal Tariff Benefits:** Many FTA partners already maintain low tariffs (eg: Australia, Singapore etc), while India has relatively higher import duties. As a result, foreign exporters gain greater access to the Indian market than Indian exporters gain abroad.
- **Low Utilisation of FTAs:** Indian exporters utilise only 20–30% of available FTA benefits, far below developed countries (70–80%) and competitors like Vietnam and Mexico (40–50%).
- **Inverted Duty Structure:** FTAs have worsened the inverted duty structure by making finished imports cheaper than raw materials, increasing production costs and reducing the competitiveness of domestic manufacturers.
- **Non-Tariff Barriers (NTBs):** Despite tariff concessions, Indian exports continue to face stringent sanitary, technical, packaging, and environmental regulations such as the EU's Carbon Border Adjustment Mechanism (CBAM), limiting market access.
- **Limited Services Liberalisation:** Although India is globally competitive in services, most FTAs focus on goods, while restrictions on visas, work permits, and professional recognition continue to constrain services exports.

Way forward:

- **Establish an FTA Impact Monitoring Authority:** Create an independent body to monitor import surges, conduct sector-wise impact assessments, and ensure FTA commitments translate into tangible trade gains.
- **Correct the Inverted Duty Structure:** Rationalise customs duties by keeping tariffs on key raw materials and intermediate goods lower than those on finished imports to improve domestic manufacturing competitiveness.

- Improve FTA Utilisation: Launch dedicated awareness and support programmes to help MSMEs understand FTA rules, meet compliance requirements, and effectively claim tariff preferences.
- Address Non-Tariff Barriers through MRAs: Prioritise Mutual Recognition Agreements so that certifications issued by Indian regulatory agencies are accepted by partner countries, reducing repetitive testing and compliance costs.
- Strengthen Digital Trade Capabilities: Adopt a digitally driven trade policy by expanding digital infrastructure, enhancing digital skills, increasing technology-intensive exports, and leveraging technologies such as AI, Big Data, IoT, and Blockchain for evidence-based trade policymaking.

India-New Zealand Free Trade Agreement

Goods

- Unprecedented Market Access for Indian Exports: Zero duty on 100% of Indian exports to New Zealand from entry into force. Benefit for Agriculture and Processed Food Products, Textiles & Clothing, Leather & Footwear and Engineering Goods.
- Protection of Sensitive products: Products such as Dairy (milk, cream, whey, yoghurt, cheese etc.), animal products (other than sheep meat), vegetable products (onions, chana, peas, corn, almonds etc.), sugar, artificial honey, Animal, vegetable or microbial fats and oils have been excluded from tariff concessions.

Services

- Market Access commitments to India in New Zealand across 118 services sectors/sub-sectors, with Most-Favoured Nation (MFN) treatment in 139 sectors/sub-sectors.
- Guarantees a minimum of 20 hours per week work during study, and provides extended post-study work opportunities-up to three years for STEM Bachelor's and Master's graduates, and up to four years for Doctorate holders-creating clear pathways for skills and global careers.
- 5,000-visa pathway for skilled Indian professionals in sectors of interest to India occupations, including IT, engineering, healthcare, education, construction and Indian iconic occupations like AYUSH practitioners, chefs, music teachers and yoga instructors.
- Working Holiday Visa access for 1,000 young Indians annually for a period of 12 months.
- Promoting Health, Wellness and Traditional Medicine Health & Traditional Medicine Annex: For the first time, New Zealand has signed an annex to facilitate trade in Ayurveda, yoga, and other traditional medicine services with India.

India-UK CETA

- Goods
 - CETA provides an unprecedented duty-free access to almost 99 per cent of India's exports to the UK, covering nearly 100% of the trade value.
 - Zero-duty concessions across the board, with zero duty Tariff Rate Quota (TRQ)-based concessions on electric vehicles (EVs)—four times larger than India's EV quota.
 - All zero-duty concessions kick in from Day One of the agreement's entry into force. Presently, 48.2% of India's export value (47.3% of TLs) enters the UK at zero duty under the MFN regime.

- India's major exports—from labour-intensive sectors like textiles, gems & jewellery, leather and footwear, organic chemical, artisanal products and ceramics to high-value goods like auto parts, machinery, pharmaceuticals, and processed foods—are set to gain a massive edge with zero-duty access to the UK, improving competitiveness of Indian goods in UK market
- A big win for Indian agriculture: The UK market opens up duty-free for nearly all Indian agri- exports, with just a few limited exceptions like pork, chicken, eggs, rice, and sugar.
- Protection of sensitive sectors: India has safeguarded its sensitive sectors—dairy, cereals and millets, pulses, and vegetables to high-value items like gold, jewellery, lab-grown diamonds, and certain essential oils. Strategic exclusions also cover critical energy fuels, marine vessels, worn clothing, and critical polymers and their monofilaments, smart phones, optical fibres.
- Services
 - The services sector, a strong driver of India's economy, will also see wide-ranging benefits. UK has provided comprehensive and deep market access in 137 sub-sectors in areas of India's interest such as IT/ITeS, Business Services, Professional Services, Financial, Telecom and Education services. Indian professionals, including those deployed by companies to work in UK across all service sectors, professionals deployed on contracts such as architects, engineers, chefs, yoga instructors, and musicians, will benefit from simplified visa procedures and liberalised entry categories, making it easier to work in the UK.

India's Free Trade Agreements have strengthened global economic integration, expanded export opportunities, and enhanced strategic partnerships. Maximizing their benefits requires improving domestic competitiveness, addressing implementation challenges, supporting MSMEs, and aligning future FTAs with national development priorities and evolving global trade dynamics.

Article IV

Unveiling the Indus Valley Civilisation: Recent discoveries.

[Bhavya K]

Imagine a quiet, sun-drenched mound in Haryana's Hisar district, where archaeologists brush away five millennia of dust to reveal not just pottery, but the silent witnesses of a forgotten era. In June 2026, the transfer of newly excavated human skeletons from Rakhigarhi to the Anthropological Survey of India marked a watershed moment. No longer mere relics, these remains are keys to our own genetic heritage, representing the latest chapter in a discipline that has evolved from speculative colonial narratives to precise, data-driven science.



Recent discoveries have fundamentally dismantled the "sudden collapse" and "external invasion" theories that once dominated textbooks. Beyond Rakhigarhi, fresh 2026 excavations at Mohenjodaro have unearthed a massive, seven-metre-thick defensive wall dating to the Early Harappan phase (3300 BCE). This pushes back our timeline for urban planning by centuries, proving that the Harappan miracle was an indigenous, incremental evolution of craft and community. By integrating ancient DNA analysis with high-resolution paleoclimatic data, we now see a society that did not abruptly vanish, but gradually transformed in response to the megadroughts of the mid-second millennium BCE.

This scientific revolution is redefining our understanding of Harappan resilience. The discovery of specialized workshops and stable-isotope analysis confirming a sophisticated dairy industry reveals a people deeply attuned to their environment, mastering long-distance trade with Dilmun and Mesopotamia without the need for central, autocratic rule. By linking these material findings to current demographic studies, we observe a clear line of cultural and biological continuity with modern populations. This evidence renders the "Aryan invasion" hypothesis obsolete, replacing it with a nuanced narrative of migration and climate-driven socio-economic adaptation.

In conclusion, the modern study of the Indus Valley Civilisation is an exercise in decolonizing history. The Harappans were not a static society that fell, but a dynamic civilization that adapted. By anchoring our analysis in genomic data, environmental science, and archaeological rigor, we honor the complexity of our past – a past that remains, quite literally, beneath our feet, waiting to be understood through the lens of modern, objective inquiry.

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