



SAMARTHYA IAS · AHMEDABAD

DAILY UPSC COMPANION

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Your Complete UPSC Current Affairs Companion

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Disaster Risk Reduction and Urban Safety: Structural Failures and Pyrotechnic Regulations



STORY 1 **The Hindu**

Six Dead in Delhi Building Collapse as Rescue Operations Continue in Satya Niketan

A five-storey building housing a student hostel collapsed during renovation work in South West Delhi's congested Satya Niketan area.

Delhi Police, Fire Service, National Disaster Response Force, and Delhi Disaster Management Authority conducted overnight joint rescue operations to rescue survivors.

The disaster resulted in six confirmed fatalities while eleven individuals were successfully rescued from under the structural debris by Monday morning.

An FIR was registered under Sections 105, 290, and 125(a) of the Bharatiya Nyaya Sanhita against the building owner following the fatal collapse.

The event underscores urban safety risks posed by unauthorized renovation of aged structures in high-density residential student hubs lacking structural audits.



STORY 2 **Times of India**

Pyrotechnic Explosion at Mexican Church Festival Kills 10 and Injures 64

A massive pyrotechnic explosion occurred during a religious patron saint celebration adjacent to the Nuestra Señora de la Luz church.

The incident took place in Temascalcingo municipality, located approximately 160 kilometres northwest of Mexico City, triggering structural collapses.

At least 10 people were killed and 64 others suffered injuries as surrounding walls collapsed and fires engulfed the central town square.

Festival attendees were trapped beneath collapsed structures while thick smoke and flying debris hindered initial community rescue efforts.

The tragedy highlights international public safety concerns regarding unregulated manufacture, storage, and detonation of commercial pyrotechnics near public gatherings.

UPSC RELEVANCE

Examines urban disaster vulnerability, enforcement of building safety codes, and regulation of hazardous pyrotechnics at public gatherings.

PRELIMS FACTS

- The National Disaster Response Force (NDRF) and State Disaster Management Authorities operate under the statutory framework of the Disaster Management Act, 2005.
- Sections 105, 290, and 125(a) of the Bharatiya Nyaya Sanhita (BNS) pertain to culpable homicide not amounting to murder, public nuisance, and endangering life or personal safety.
- High-density urban clusters and unauthorized structural alterations significantly elevate building collapse risks during routine maintenance activities.

MAINS FRAMEWORK

Intro: Frequent structural collapses and explosive industrial hazards highlight critical systemic deficits in urban planning, building code compliance, and event safety protocols across dense human settlements.

DIMENSIONS

- Urban Governance and Regulatory Compliance
- Public Event Safety and Explosive Hazard Management
- Emergency Response and Rehabilitation Interventions

Way forward: Implement mandatory periodic structural audits for all commercial and residential accommodations, digitize building permission tracking, and strictly enforce the Explosives Rules for public cultural gatherings.

PYQ LINK

Analyses the effectiveness of urban disaster risk reduction frameworks and institutional response mechanisms during infrastructure accidents.

KEY TERMS

Disaster Risk Reduction

Urban Vulnerability

Building Safety Code

Hazardous Material Regulation

National Disaster Response Force

ACTS & ARTICLES

Disaster Management Act, 2005

Bharatiya Nyaya Sanhita (BNS) Sections 105, 290, 125(a)

National Building Code of India (NBC 2016)

02

GS PAPER 3: ENVIRONMENTAL CONSERVATION

Eco-Hydrology and Environmental Conservation: Impacts of Monoculture Forestry and Industrial Infrastructure



STORY 1 Times of India

Groundwater Levels Drop 4.5 Metres Following Decades of Eucalyptus Monoculture in Brazil

Scientific monitoring in Minas Gerais, Brazil, revealed a 4.5-metre groundwater decline over 45 years due to industrial eucalyptus plantations.

Vast forest plantations were established across Brazilian provinces to supply fast-growing timber for the global paper and pulp industry.

Rural communities reported severe depletion of local streams and agricultural water access as eucalyptus roots absorbed deep subsoil moisture.

In regions like Bahia, extensive monoculture plantations created ecological 'green deserts' devoid of natural understory vegetation and native fauna.

The long-term study highlights critical global lessons on balancing industrial forestry economics with eco-hydrological sustainability and groundwater conservation.



STORY 2 Times of India

Proposed Data Centre Beside Nashville Zoo Triggers Public Opposition Over Wildlife Impact

A proposed 69,000-square-foot data centre facility planned adjacent to Nashville Zoo triggered widespread public protest and legal scrutiny.

Nearly 600,000 citizens signed a petition opposing the DC BLOX development project to protect captive wildlife from continuous operational stress.

Zoo officials warned that round-the-clock artificial light, low-frequency hums, and continuous noise would severely disrupt endangered species conservation programmes.

A captive-born clouded leopard cub named Mayuree became the public face of the campaign demanding strict zoning controls on digital infrastructure.

The dispute prompted local municipal authorities to introduce regulatory restrictions on large-scale data centres located near ecological and zoological reserves.

UPSC RELEVANCE

Evaluates ecological risks associated with fast-growing commercial tree monocultures and heavy industrial energy developments near sensitive habitats.

PRELIMS FACTS

- Eucalyptus species possess deep taproot systems and high transpiration rates, significantly reducing soil moisture and local groundwater tables.
- The term 'green desert' refers to dense monoculture plantations that severely lack native understory vegetation and biological diversity.
- Clouded leopards (*Neofelis nebulosa*) are classified as Vulnerable under the IUCN Red List and are sensitive to artificial light and industrial noise.

MAINS FRAMEWORK

Intro: Unregulated expansion of industrial forestry monocultures and energy-intensive digital infrastructure poses severe long-term threats to local hydrology and ecological integrity.

DIMENSIONS

- Hydrological Degradation from Commercial Monocultures
- Industrial Encroachment on Wildlife and Conservation Zones
- Policy Interventions and Sustainable Land-Use Governance

Way forward: Mandate comprehensive Eco-Hydrological Assessments for monoculture forestry projects and enforce strict acoustic and lighting buffer zones for industrial facilities near ecological reserves.

PYQ LINK

Examines ecological degradation caused by commercial land-use change, exotic plantation forestry, and industrial encroachment on biodiversity.

KEY TERMS

Eco-Hydrology

Monoculture Forestry

Groundwater Depletion

Ecosystem Fragmentation

Environmental Impact Assessment

ACTS & ARTICLES

Environment Protection Act, 1986

National Forest Policy, 1988

Biological Diversity Act, 2002

03

GS PAPER 3: SCIENCE AND TECHNOLOGY

Bio-Sanitation and Public Health: Pathogen Persistence in Non-Sewered Sanitation Systems



STORY 1 Times of India

Study Finds Parasitic Ascaris Eggs Survive Vermicomposting in Tiger Worm Toilets

Research published in the Royal Society of Chemistry evaluated pathogen inactivation during vermicomposting of human faecal waste in tiger worm toilets.

Laboratory experiments utilized *Eisenia fetida* (tiger worms) inside specialized biodigesters containing pig faeces inoculated with known concentrations of *Ascaris suum* eggs.

Results demonstrated that parasitic *Ascaris* eggs remained fully intact and viable despite prolonged biological digestion and exposure to active earthworms.

Viable eggs were detected within final vermicompost outputs as well as gravel drainage layers, coconut coir bedding, and liquid effluent streams.

Findings reveal critical public health limitations in relying solely on earthworms for sanitation, requiring secondary disinfection before bio-fertilizer application.

UPSC RELEVANCE

Examines technological limitations in decentralised vermicomposting sanitation and public health risks associated with soil-transmitted helminths.

PRELIMS FACTS

- *Eisenia fetida*, commonly known as the tiger worm, is widely utilized in bio-digester toilets to decompose organic human waste into vermicompost.
- *Ascaris suum* and *Ascaris lumbricoides* eggs possess multi-layered thick shells resistant to environmental degradation and enzymatic digestion.
- Non-sewered sanitation systems rely on biological digestion processes without connection to centralized municipal sewage treatment networks.

MAINS FRAMEWORK

Intro: While non-sewered bio-digester sanitation systems offer sustainable waste reduction, persistent survival of resilient helminth eggs poses unaddressed microbial contamination risks.

DIMENSIONS

- Biotechnology and Waste Inactivation Limits
- Public Health and Agricultural Safety Hazards
- Sanitation Policy and Secondary Treatment Integration

Way forward: Standardize multi-barrier treatment protocols combining vermicomposting with thermal pasteurization or alkaline stabilization to ensure complete pathogen elimination in bio-toilet sludge.

PYQ LINK

Evaluates the role of biotechnology and innovative sanitation solutions in achieving public health and safe waste management targets.

KEY TERMS

Bio-Sanitation

Vermicomposting

Eisenia fetida

Ascaris suum

Soil-Transmitted Helminths

ACTS & ARTICLES

Environment Protection Act, 1986

Solid Waste Management Rules, 2016

Swachh Bharat Mission Guidelines

National Urban Sanitation Policy

04

GS PAPER 2: HEALTH & SOCIAL SECTOR

Public Health and Healthcare Delivery: Addressing Corneal Blindness and Neurological Care



STORY 1

The Hindu

India Faces Severe Deficit in Corneal Transplants Despite Growth in Eye Banking

India currently operates 396 functional eye banks, with corneal collections increasing from 62,370 in 2022–23 to 69,848 in 2024–25.

Despite tissue collection growth, a severe supply deficit remains with 2 million corneally blind citizens and only 40,000 annual transplants performed.

Key operational challenges involve translating public awareness into timely post-mortem family consent, efficient tissue retrieval, and high-quality surgical transplantation.

The National Programme for Control of Blindness and Visual Impairment (NPCBVI) plays a vital regulatory role in expanding tissue banking infrastructure.

Addressing India's corneal blindness burden requires a robust public-private-NGO collaborative framework to optimize donor tissue utilization and hospital retrieval.

UPSC RELEVANCE

Analyses structural gaps in organ donation frameworks, eye banking networks, and specialized neurological care accessibility in India.

PRELIMS FACTS

- The National Programme for Control of Blindness and Visual Impairment (NPCBVI) is a 100% centrally sponsored scheme launched to reduce blindness prevalence.
- Peripheral neuropathy affects approximately 1% of the general population and up to 10% of individuals aged above 60 years.
- MR Neurography and nerve ultrasound represent advanced non-invasive diagnostic imaging tools used to visualize peripheral nerve disorders.

MAINS FRAMEWORK

Intro: India's healthcare delivery faces dual challenges of a widening demand-supply gap in organ transplantation and growing prevalence of chronic neurological disorders among aging populations.

DIMENSIONS

- Structural Bottlenecks in Eye Donation
- Under-Recognized Non-Communicable Neurological Burden
- Strengthening Public-Private-NGO Synergy

Way forward: Establish mandatory Hospital Retrieval Programmes in major mortuaries, expand regional nerve diagnostic CME platforms, and strengthen public-private partnerships under NPCBVI.

PYQ LINK

Discusses challenges in public healthcare delivery, institutional organ retrieval systems, and rural-urban healthcare access disparities.

KEY TERMS

National Programme for Control of Blindness

Corneal Transplantation

Peripheral Neuropathy

Eye Banking Infrastructure

Public Health Ecosystem

ACTS & ARTICLES

Transplantation of Human Organs Act, 1994

National Health Policy, 2017

Article 21 (Right to Health)

05

GS PAPER 3: SCIENCE AND TECHNOLOGY

Space Technology and Earth Observation: Private Commercial Expansion in Planetary Hyperspectral Imaging



STORY 1 The Hindu

Space Startup Pixxel Raises \$100 Million Series C to Expand Earth Intelligence Infrastructure

Bengaluru-based space-tech firm Pixxel closed a \$100 million Series C funding round co-led by Temasek and Seraphim, raising total capital to \$195 million.

The investment marks the single largest funding round achieved by a private space technology company operating within the Indian space ecosystem.

Capital will accelerate expansion beyond hyperspectral satellites into advanced sensing hardware, satellite manufacturing, and 'Aurora' Earth intelligence software.

Pixxel's hyperspectral technology captures detailed electromagnetic spectral data invisible to conventional satellite cameras, supporting climate and environmental tracking.

The funding highlights growing commercial confidence in Indian private space ventures offering dual-use capabilities for commercial and sovereign space applications.

UPSC RELEVANCE

Evaluates private sector growth in India's space ecosystem, hyperspectral satellite capabilities, and applications in planetary monitoring.

PRELIMS FACTS

- Hyperspectral imaging captures continuous narrow spectral bands across the electromagnetic spectrum, enabling precise identification of materials and soil chemistry.
- IN-SPACe (Indian National Space Promotion and Authorisation Centre) is the single-window autonomous agency regulating private space activities in India.
- Satellite remote sensing allows real-time environmental tracking, crop health assessment, and strategic sovereign surveillance.

MAINS FRAMEWORK

Intro: The commercialization of India's space sector is accelerating rapidly, marked by record-breaking venture capital investments in private hyperspectral remote sensing constellations.

DIMENSIONS

- Technological Advancement in Earth Intelligence
- Economic and Strategic Impact on Private Ecosystem
- Socio-Economic Applications for Climate and Agriculture

Way forward: Streamline IN-SPACe authorization processes, create anchor procurement mechanisms for private space data, and foster deep-tech research funding.

PYQ LINK

Analyses the liberalisation of the space sector, role of private space startups, and applications of remote sensing technology in national development.

KEY TERMS

Hyperspectral Imaging

Planetary Infrastructure

IN-SPACe

Earth Intelligence

Sovereign Space Systems

ACTS & ARTICLES

Indian Space Policy 2023

IN-SPACe Guidelines

Geospatial Data Guidelines 2021

FDI Policy in Space Sector (2024 Amendments)

06

GS PAPER 2: GOVERNANCE & POLITY

Land Revenue Administration and Legal Reforms: Governance Friction Over Prohibited Property Lists



STORY 1

The Hindu

Prohibited Property List Under Section 22A Disrupts Telangana Assembly Proceedings

The opening day of the Telangana Legislative Assembly's monsoon session was disrupted over the controversial inclusion of land under Section 22A prohibited lists.

Opposition members protested in the Well of the House, demanding a judicial inquiry by a sitting judge into alleged irregularities in land deals.

Section 22A of the Registration Act restricts registration of specified state-owned, assigned, or disputed lands, directly impacting private land transactions.

Legislative Affairs Minister D. Sridhar Babu assured the House that the government was willing to schedule a short discussion following the Business Advisory Committee meeting.

The legislative row highlights ongoing governance challenges in state land revenue management, property title transparency, and revenue record digitisation.

UPSC RELEVANCE

Examines legal frameworks governing registration of prohibited land, administrative transparency, and legislative friction over land deals.

PRELIMS FACTS

- Section 22A of the Registration Act, 1908 empowers state governments to notify lists of properties prohibited from registration.
- Prohibited properties under Section 22A generally include government lands, assigned lands, religious endowment properties, and disputed titles.
- State legislatures possess constitutional authority over land revenue and property registration under State List Entries in the Seventh Schedule.

MAINS FRAMEWORK

Intro: Arbitrary or non-transparent inclusion of private lands in statutory prohibited property lists creates administrative bottlenecks, depresses property values, and triggers institutional political friction.

DIMENSIONS

- Legal and Administrative Controversies
- Impact on Citizens and Investment Climate
- Institutional Accountability and Reforms

Way forward: Implement time-bound grievance redressal mechanisms for Section 22A disputes, publish updated digital prohibited databases, and establish appellate land tribunals.

PYQ LINK

Discusses land administration challenges, property registration disputes, and the role of legislative debate in executive accountability.

KEY TERMS

Section 22A Registration Act

Prohibited Property List

Land Revenue Administration

Judicial Inquiry

Legislative Oversight

ACTS & ARTICLES

Registration Act, 1908 (Section 22A)

Telangana Land Revenue Act

Seventh Schedule of the Constitution (List II Entry 18)

Article 300A (Right to Property)

Sensory Ecology and Entomology: Acoustic Illusions in Bats and Taxonomical Discoveries



STORY 1 Times of India

Echolocating Bats Repeatedly Attempt to Drink From Smooth Plastic Artificial Surfaces

Researchers at the Max Planck Institute for Ornithology conducted controlled experiments demonstrating that 11 bat species mistake smooth surfaces for drinking water.

Smooth sheets of plastic, metal, and polished wood return acoustic signals identical to water surfaces when echolocated by flying bats.

Bats repeatedly lowered themselves to attempt drinking from dry plastic sheets covering drinking pools, failing to recognize the artificial barrier.

The study revealed that even juvenile bats with no prior exposure to natural lakes exhibited identical automated behavioral responses to smooth surfaces.

Findings reveal how smooth artificial structures like solar panels and modern building materials can create perceptual sensory traps for nocturnal wildlife.



STORY 2 Times of India

German Biologist Patrick Urban Identifies New Dung Beetle Species From Yunnan Collections

Taxonomist Patrick Urban identified a previously undescribed species of dung beetle while analyzing insect collections from Yunnan province, China.

Specializing in the tribe Onthophagini across Palearctic and Indomalayan regions, Urban identified distinct physical variations during detailed morphological examinations.

The discovery stemmed from processing beetles recovered from regional dung washings, highlighting the richness of unmapped insect biodiversity.

Formal publication in 2026 officially added the new species to scientific records, demonstrating the vital role of taxonomical research.

Dung beetles play crucial ecological roles in nutrient cycling, carbon sequestration, and soil aeration within natural forest ecosystems.

UPSC RELEVANCE

Explores wildlife sensory ecology, urban anthropogenic impacts on animal behavior, and the importance of insect taxonomy in biodiversity mapping.

PRELIMS FACTS

- Microchiropteran bats utilize echolocation by emitting high-frequency sound waves and interpreting returning acoustic echo patterns.
- Smooth horizontal surfaces act as 'acoustic mirrors', reflecting sound pulses away and misinforming bats that open drinking water is present.
- Dung beetles belonging to the tribe Onthophagini play critical ecological roles in nutrient cycling, soil aeration, and seed dispersal.

MAINS FRAMEWORK

Intro: Anthropogenic modifications to physical environments create novel sensory traps for wildlife relying on specialized acoustic perceptions, while taxonomical research uncovers crucial bio-indicator species.

DIMENSIONS

- Mechanisms of Acoustic Sensory Traps
- Ecological Significance of Insect Taxonomy
- Mitigation and Conservation Engineering

Way forward: Incorporate wildlife sensory impact mitigation in civil engineering designs and step up funding for taxonomical inventorying in ecological biodiversity hotspots.

PYQ LINK

Analyses how human-made structures influence animal behavior and the ecological role of bio-indicator species in environmental monitoring.

KEY TERMS

Sensory Ecology

Echolocation

Acoustic Mirror Illusion

Insect Taxonomy

Onthophagini

ACTS & ARTICLES

Wildlife Protection Act, 1972

Biological Diversity Act, 2002

Convention on Biological Diversity (CBD)

Energy Transition and Automotive Sector: Market Growth and Alternative Fuel Penetration



STORY 1 **The Hindu**

Alternative Fuel Vehicles Exceed Petrol Share in Indian Passenger Car Retail Sales

Indian automobile retail sales for August 2026 reached 24,23,201 total units, registering a 17.51% year-on-year growth according to FADA data.

For the first time in Indian automotive history, alternative fuels (CNG, hybrid, electric combined) outpaced petrol passenger vehicles with a 41.95% market share.

Petrol passenger vehicle market share contracted to 40.85% as consumer buying shifted towards dual-fuel CNG models and electric vehicles.

Segment growth was led by Wheeled Construction Equipment (31.45%), Two-Wheelers (19.69%), Passenger Vehicles (16.14%), and Commercial Vehicles (14.45%).

Retail volumes experienced a minor 6.48% month-on-month decline compared to July due to monsoon seasonality and shifting festive calendar dates.

UPSC RELEVANCE

Examines structural trends in India's automotive retail sector, adoption rates of alternative fuel vehicles, and national clean mobility policy.

PRELIMS FACTS

- Alternative fuel passenger vehicles encompass Compressed Natural Gas (CNG), hybrid electric, and battery electric vehicles (EVs).
- FADA (Federation of Automobile Dealers Associations) tracks national automotive retail registration data via the central Vahan portal.
- The FAME and PM E-DRIVE schemes serve as primary national framework initiatives promoting electric vehicle adoption across India.

MAINS FRAMEWORK

Intro: India's automotive retail sector reached a historical energy transition milestone as combined sales of alternative fuel passenger vehicles surpassed traditional petrol models.

DIMENSIONS

- Structural Shifts in Consumer Fuel Choice
- Economic and Manufacturing Implications
- Infrastructure and Policy Challenges

Way forward: Expand public charging infrastructure under PM E-DRIVE, harmonize state EV policies, and incentivize indigenous battery cell production under the PLI scheme.

PYQ LINK

Analyses the macroeconomic growth of the manufacturing sector and market transition towards clean energy mobility solutions.

KEY TERMS

Alternative Fuel Vehicles

Electric Mobility

CNG Passenger Vehicles

Automotive Retail Data

Federation of Automobile Dealers Associations

ACTS & ARTICLES

Motor Vehicles Act, 1988 (and Amendments)

National Auto Policy

PM E-DRIVE Scheme Guidelines

National Green Hydrogen Mission

09

GS PAPER 2: INTERNATIONAL RELATIONS

International Relations and Regional Security: Military Airstrikes and Evacuation Orders in South Lebanon



STORY 1

The Hindu

Israeli Military Orders Fresh Evacuations in Southern Lebanon Ahead of Targeted Strikes

The Israeli military issued urgent evacuation notices for residents of Deir Zahrani and Arab Salim in southern Lebanon ahead of planned strikes.

Military officials cited incoming explosive drone launches and armed Hezbollah activity in the border area as justification for intensified operations.

Iranian Parliament Speaker Mohammad Bagher Ghalibaf issued warnings stating rules of engagement had changed, threatening painful responses to attacks.

Cross-border military strikes in Arab Salim village caused seven civilian fatalities, triggering calls for international diplomatic intervention.

Escalating West Asia hostilities pushed global oil prices upward towards \$97 per barrel due to rising supply chain disruption fears.

UPSC RELEVANCE

Examines geopolitics in West Asia, sovereignty issues, displacement of civilians, and implications for international energy security.

PRELIMS FACTS

- UN Security Council Resolution 1701 was adopted in 2006 to resolve the conflict between Israel and Hezbollah in southern Lebanon.
- Deir Zahrani and Arab Salim are key municipalities situated in the South Governorate of Lebanon near the Litani River basin.
- West Asia geopolitical escalations directly influence global crude oil spot prices due to maritime risk premiums in key transit chokepoints.

MAINS FRAMEWORK

Intro: Resurgent military hostilities and mandatory evacuations across southern Lebanon underscore fragile regional security dynamics and rising threats to civilian populations in West Asia.

DIMENSIONS

- Military Escalation and Humanitarian Impact
- Geopolitical Dynamics and Multi-Lateral Diplomacy
- Economic Consequences and Global Energy Vulnerability

Way forward: Re-establish active diplomatic mediation under UN auspices, enforce UNSC Resolution 1701 commitments, and establish safe humanitarian supply corridors.

PYQ LINK

Discusses political instability in West Asia, impact on regional stability, and energy security ramifications for developing economies.

KEY TERMS

West Asia Conflict

UNSC Resolution 1701

Non-State Actors

Global Energy Security

International Humanitarian Law

ACTS & ARTICLES

UN Security Council Resolution 1701

Geneva Conventions (Fourth Convention relative to Protection of Civilians)

10

GS PAPER 3: ENVIRONMENT & ECONOMIC DEVELOPMENT

Sustainable Infrastructure and Circular Economy: Urban Material Reuse and Philanthropic Financing



STORY 1 Times of India

Rockefeller Center Christmas Tree Wood Milled into Building Materials for Affordable Housing

Since 2007, New York's iconic Rockefeller Center Christmas tree has been systematically converted into construction lumber following holiday displays.

The recycled timber is donated to Habitat for Humanity to build and rehabilitate affordable housing across New York, Mississippi, and other states.

The program converts seasonal urban foliage waste into structural lumber, supporting circular economy practices within municipal waste management.

The initiative demonstrates how high-profile municipal holiday installations can be sustainably repurposed to solve social housing challenges.

Collaborative partnerships between private property owners and housing NGOs showcase effective material lifecycle management in modern cities.



STORY 2 Times of India

EBay Pioneer Jeff Skoll Directs \$1.2 Billion Into Global Threat Philanthropy

Jeff Skoll, eBay's first full-time employee and initial president, built a \$5.9 billion fortune after leading the company's 1998 IPO.

Over two decades, Skoll donated approximately \$1.2 billion through the Skoll Foundation and Skoll Global Threats Fund.

Philanthropic investments targeted systemic social change projects including global pandemic response, climate mitigation, and poverty alleviation.

His philanthropic model combines impact investing, non-profit grantmaking, and social-issue filmmaking to address urgent international crises.

The initiative demonstrates how technology-derived venture capital can be redirected to fund international public goods and social innovation.



STORY 3

Times of India

Craftsmen Erect 1994 Balinese Ironwood Estate Rebuilt Across Pacific in Hawaii

A traditional Balinese architectural compound built in 1994 by 280 Indonesian craftsmen was dismantled, shipped, and reconstructed in Hawaii.

Constructed from authentic Indonesian ironwood and teak, the three-acre coastal estate incorporates open-air decks and sheltered inter-connecting walkways.

The structure features over one million roof shingles, demonstrating modular timber engineering capable of complete relocation without structural degradation.

Currently listed at \$32.5 million on Hawaii's Kohala Coast, the property illustrates architectural heritage migration and sustainable heavy timber adaptation.

The project reflects traditional South-East Asian tropical design principles adapted for modern resilience along dynamic oceanfront environments.

UPSC RELEVANCE

Examines circular economy practices, sustainable timber recycling, Balinese architectural heritage, and social impact investment.

PRELIMS FACTS

- Sustainable timber recycling diverts urban organic waste from landfills and lowers carbon footprints associated with new building materials.
- Balinese traditional architecture emphasizes natural timber structures, open-air pavilion designs, and harmonious integration with natural surroundings.

- Philanthropic foundations and impact funds play an increasing role in addressing systemic global threats like climate change and pandemic risks.

MAINS FRAMEWORK

Intro: Innovative urban material reuse frameworks and venture-derived philanthropic capital provide actionable models for achieving circular economy goals and funding global public goods.

DIMENSIONS

- Urban Circular Economy and Timber Upcycling
- Architectural Heritage Preservation and Structural Adaptation
- Role of Private Philanthropy and Impact Investments

Way forward: Institutionalize mandatory urban timber recovery programs in municipal waste policies and create tax incentives for corporate social impact funding.

PYQ LINK

Analyses circular economy models in waste mitigation, affordable housing initiatives, and the role of private philanthropy in global problem-solving.

KEY TERMS

Circular Economy

Sustainable Architecture

Impact Investing

Philanthropic Capital

Timber Recycling

ACTS & ARTICLES

Solid Waste Management Rules, 2016

Companies Act, 2013 (Section 135 - Corporate Social Responsibility)

National Urban Housing and Habitat Policy

Practice MCQs (UPSC Prelims)

Attempt these questions on your own first. The answer key is on the next page.

GS PAPER 3: ECONOMY & CLEAN MOBILITY

Energy Transition and Automotive Sector: Market Growth and Alternative Fuel Penetration

Alternative Fuel Vehicles Exceed Petrol Share in Indian Passenger Car Retail Sales

Q1. With reference to recent trends in the Indian passenger vehicle market as reported by dealer association data in 2026, consider the following statements: 1. The combined market share of alternative fuel vehicles (CNG, hybrid, and electric) surpassed petrol passenger vehicles in monthly retail sales. 2. The Federation of Automobile Dealers Associations (FADA) tracks national retail sales using vehicle registration data from the Vahan portal. Which of the statements given above is/are correct?

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

GS PAPER 3: SCIENCE & TECHNOLOGY

Space Technology and Earth Observation: Private Commercial Expansion in Planetary Hyperspectral Imaging

Space Startup Pixxel Raises \$100 Million Series C to Expand Earth Intelligence Infrastructure

Q2. Consider the following statements regarding Hyperspectral Imaging technology in satellite remote sensing: 1. Hyperspectral sensors capture contiguous, narrow spectral bands across the electromagnetic spectrum, enabling precise chemical and material identification. 2. Multispectral sensors capture significantly more spectral bands than hyperspectral sensors. Which of the statements given above is/are correct?

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

GS PAPER 3: BIOTECHNOLOGY & SANITATION

Bio-Sanitation and Public Health: Pathogen Persistence in Non-Sewered Sanitation Systems

Study Finds Parasitic Ascaris Eggs Survive Vermicomposting in Tiger Worm Toilets

Q3. Regarding the biological waste digestion mechanism in tiger worm toilets, consider the following statements: 1. Eisenia fetida earthworms are widely used in vermicomposting systems due to their capacity to break down organic waste. 2. Research shows that vermicomposting completely degrades and neutralizes thick-shelled Ascaris parasitic eggs without needing secondary treatment. Which of the statements given above is/are correct?

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

GS PAPER 3: ENVIRONMENT & WILDLIFE ECOLOGY

Sensory Ecology and Entomology: Acoustic Illusions in Bats and Taxonomical Discoveries

Echolocating Bats Repeatedly Attempt to Drink From Smooth Plastic Artificial Surfaces

Q4. In the context of sensory ecology, why do echolocating bats repeatedly attempt to drink from smooth artificial surfaces made of plastic or polished metal?

- A. They rely on thermal radiation emitted by synthetic materials.
- B. Smooth surfaces reflect acoustic echolocation pulses similarly to still water surfaces, creating a sensory illusion.
- C. Synthetic materials release chemical odors that attract nocturnal insectivores.
- D. High-frequency bat echolocation pulses are completely absorbed by plastic surfaces without returning echoes.

GS PAPER 3: ENVIRONMENTAL CONSERVATION

Eco-Hydrology and Environmental Conservation: Impacts of Monoculture Forestry and Industrial Infrastructure

Groundwater Levels Drop 4.5 Metres Following Decades of Eucalyptus Monoculture in Brazil

Q5. Which of the following environmental phenomena is most commonly associated with long-term, commercial eucalyptus monoculture plantations?

- A. Significant rise in shallow groundwater tables due to canopy shading.
- B. Substantial depletion of deep groundwater levels and suppression of native understory biodiversity.
- C. Elimination of soil erosion through deep taproot nitrogen fixation.
- D. Rapid increase in native mammalian herbivore populations.

GS PAPER 2: SOCIAL JUSTICE & HEALTH POLICY

Public Health and Healthcare Delivery: Addressing Corneal Blindness and Neurological Care

India Faces Severe Deficit in Corneal Transplants Despite Growth in Eye Banking

Q6. With reference to the National Programme for Control of Blindness and Visual Impairment (NPCBVI) in India, consider the following statements: 1. It is a central sector initiative aimed at reducing the prevalence of blindness in India. 2. India performs over 500,000 corneal transplants annually, exceeding domestic donor tissue demand. Which of the statements given above is/are correct?

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

Answer Key — Practice MCQs

Quick reference and explanations for the practice questions on the previous page.

Q1: C

Q2: A

Q3: A

Q4: B

Q5: B

Q6: A

Q1 Option C · Both 1 and 2

Both statements are correct. According to August 2026 FADA retail data, alternative fuel passenger vehicles (CNG, hybrid, EV combined) reached 41.95% market share, overtaking petrol vehicles (40.85%) for the first time in Indian history. FADA collects actual retail sales data via the central Vahan registration portal.

Q2 Option A · 1 only

Statement 1 is correct. Hyperspectral imaging collects hundreds of narrow, continuous spectral bands across the electromagnetic spectrum, allowing chemical composition analysis of Earth surfaces. Statement 2 is incorrect because multispectral imaging uses fewer, broader spectral bands compared to hyperspectral imaging.

Q3 Option A · 1 only

Statement 1 is correct; Eisenia fetida (tiger worms) feed on organic waste in non-sewered bio-toilets. Statement 2 is incorrect because recent research published in the Royal Society of Chemistry confirmed that Ascaris suum parasitic eggs remain intact and viable during vermicomposting, posing pathogen persistence risks if untreated.

Q4

Option B · Smooth surfaces reflect acoustic echolocation pulses similarly to still water surfaces, creating a sensory illusion.

Experiments conducted by the Max Planck Institute demonstrate that smooth artificial surfaces act as 'acoustic mirrors' to echolocating bats. The smooth surface reflects sound pulses away in a manner identical to quiet water pools, creating a powerful acoustic mirror illusion that tricks bats into trying to drink.

Q5 Option B · Substantial depletion of deep groundwater levels and suppression of native understory biodiversity.

Eucalyptus trees consume large volumes of subsoil water through deep root networks and high transpiration rates. Studies spanning 45 years in Brazil showed a 4.5-metre drop in local groundwater tables alongside the creation of 'green deserts' that lack native understory vegetation and biodiversity.

Q6 Option A · 1 only

Statement 1 is correct as NPCBVI is a major central healthcare programme addressing curable blindness. Statement 2 is incorrect because India currently performs only about 40,000 corneal transplants annually, far short of the estimated 2 million corneally blind individuals needing donor tissue.