



PadhAI



Down to *Earth*

SUMMARY FOR UPSC

MAGAZINE

16-30TH JUNE 2026

Welcome to PadhAI—

Down to Earth Magazine Coverage

You're here because you understand a core truth of UPSC preparation—success doesn't come from reading everything, but from reading what actually matters.

Down to Earth is one of the most valuable sources for environment, ecology, and sustainable development. However, reading it cover to cover can be time-consuming and often difficult to align directly with exam demands. PadhAI's Down to Earth coverage is designed to simplify that process—by filtering, structuring, and converting important content into exam-ready insights.

Why PadhAI's Down to Earth Coverage

Many aspirants struggle with Down to Earth because of:

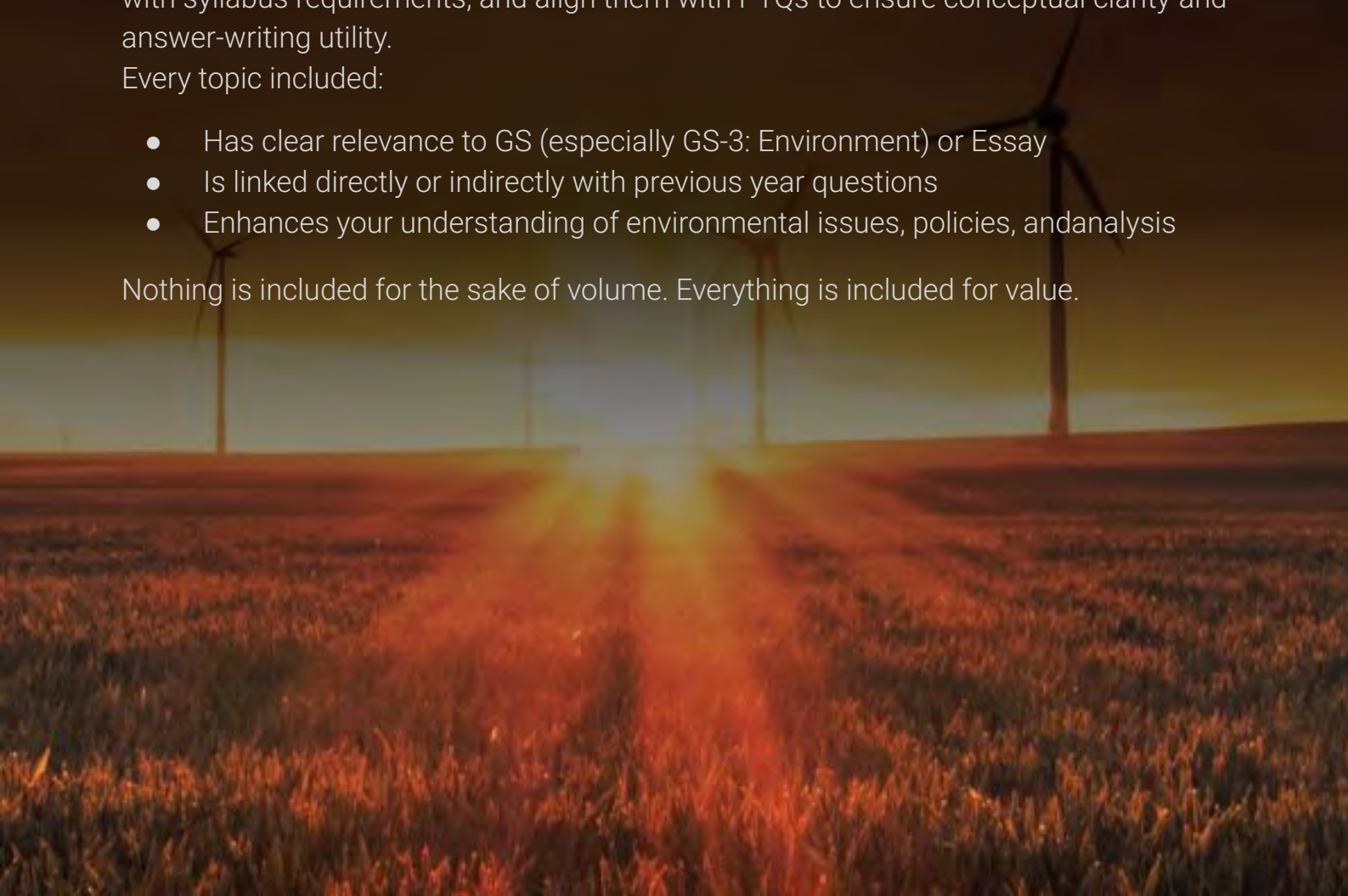
- Detailed and lengthy articles
- Indirect linkage with Prelims and Mains
- Difficulty in extracting core concepts and usable points

At PadhAI, we focus only on what is relevant. We identify key themes, connect them with syllabus requirements, and align them with PYQs to ensure conceptual clarity and answer-writing utility.

Every topic included:

- Has clear relevance to GS (especially GS-3: Environment) or Essay
- Is linked directly or indirectly with previous year questions
- Enhances your understanding of environmental issues, policies, and analysis

Nothing is included for the sake of volume. Everything is included for value.



Part of the PadhAI Preparation Ecosystem

This Down to Earth coverage is integrated with a broader system that includes:

- Fast and concise magazines (published early)
- Daily PIB summaries (filtered and exam-focused)
- Monthly compliance coverage
- Complete Prelims & Mains PYQs with structured answers
- News summaries from relevant sources
- Personal tutor chat support for continuous guidance

The goal is simple: One reliable system instead of multiple scattered sources.

Our Guiding Philosophy

At PadhAI, everything is built on three principles:

- Learn only what matters
- Learn it the right way
- Learn it at the right time

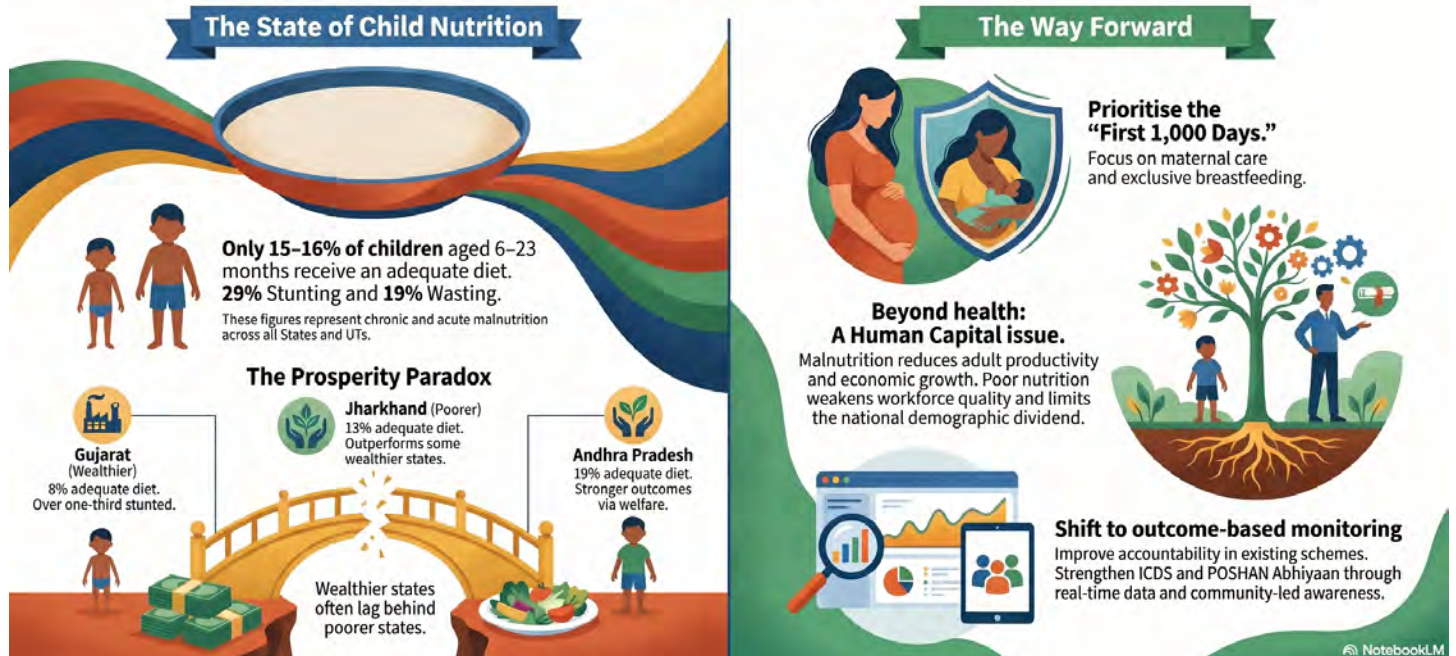
That's how preparation becomes focused, efficient, and effective.



Topic 1: India's Child Nutrition Challenge: NFHS-6

India's Child Nutrition Crisis: Key Findings from NFHS-6

Despite decades of policy interventions, NFHS-6 reveals malnutrition as a critical challenge, highlighting a significant gap between economic growth and nutritional outcomes.



Summary: Malnutrition persists as a critical human capital challenge in India despite decades of interventions, as revealed by NFHS-6. The findings highlight alarming rates of inadequate diet, stunting, and wasting among young children, especially in rural areas, threatening India's demographic dividend.

Background: The National Family Health Survey (NFHS) is a large-scale, nationally representative survey conducted periodically since 1992–93. NFHS-6 (2023–24) assesses health and nutritional status to monitor development goals and aid policy formulation under the Ministry of Health and Family Welfare.

Key Points:

- **Inadequate Diet:** Only 15% of breastfed children (aged 6–23 months) and 16% of non-breastfed children receive an adequate diet, meaning nearly 85% of young children lack minimum meal frequency and dietary diversity.
- **Stunting and Wasting:** The survey recorded a stunting (low height-for-age) rate of 29% and a wasting (low weight-for-height) rate of 19%, revealing severe magnitudes of chronic



and acute malnutrition. Rural areas report higher levels than urban areas, indicating deficiencies in service delivery.

- **State-Level Paradox:** Wealthier states like Gujarat perform poorly, with only 8% receiving adequate diets, while poorer states like Jharkhand perform relatively better (over 13%).

Prelims Facts (One Liners):

- Stunting is defined as low height-for-age, and wasting is defined as low weight-for-height.
- NFHS is implemented by the International Institute for Population Sciences (IIPS), Mumbai.

MCQ Practice: Q. Which institution acts as the implementing agency for the National Family Health Survey (NFHS) in India? A) NITI Aayog B) International Institute for Population Sciences (IIPS) C) Indian Council of Medical Research (ICMR) D) Ministry of Statistics and Programme Implementation **Answer: B** (IIPS, Mumbai, conducts the survey under the nodal Ministry of Health and Family Welfare.)

Topic 2: Climate Change and India's Coastline: Emerging Risks by 2040



Summary: A new report projects severe climate vulnerabilities along India's 11,000 km coastline by 2040, characterised by rising temperatures and shifting rainfall patterns. These divergent climatic changes threaten coastal infrastructure, agriculture, and sensitive ecosystems like mangroves.

Background: The Azim Premji University report, *Indian Coastal Region: Climate Projections 2021–2040*, outlines the emerging risks to India's coasts, underscoring the urgent need for region-specific adaptation and resilient infrastructure.

Key Points:

- **Divergent Rainfall Trends:** The western coast is expected to become wetter, with Kachchh (Gujarat) witnessing a 31% increase in monsoon rainfall, leading to flood risks. Conversely, the eastern coast (Odisha, West Bengal) faces declining rainfall and water scarcity.
- **Shift in Seasonality:** Southern east-coast states like Tamil Nadu and Andhra Pradesh, which rely on the Northeast Monsoon, are expected to receive excess rainfall during the Southwest Monsoon, disrupting agricultural calendars.
- **Temperature Rise:** Nearly 40 coastal districts will experience a summer maximum temperature rise of over 1°C, with Ernakulam (Kerala) projected to see the highest increase (1.3°C), exacerbating heat stress and health risks.

Prelims Facts (One Liners):

- Kachchh (Gujarat) is projected to witness a 31% increase in average monsoon rainfall by 2040.
- Ernakulam (Kerala) is expected to record the highest average maximum summer temperature rise at 1.3°C.

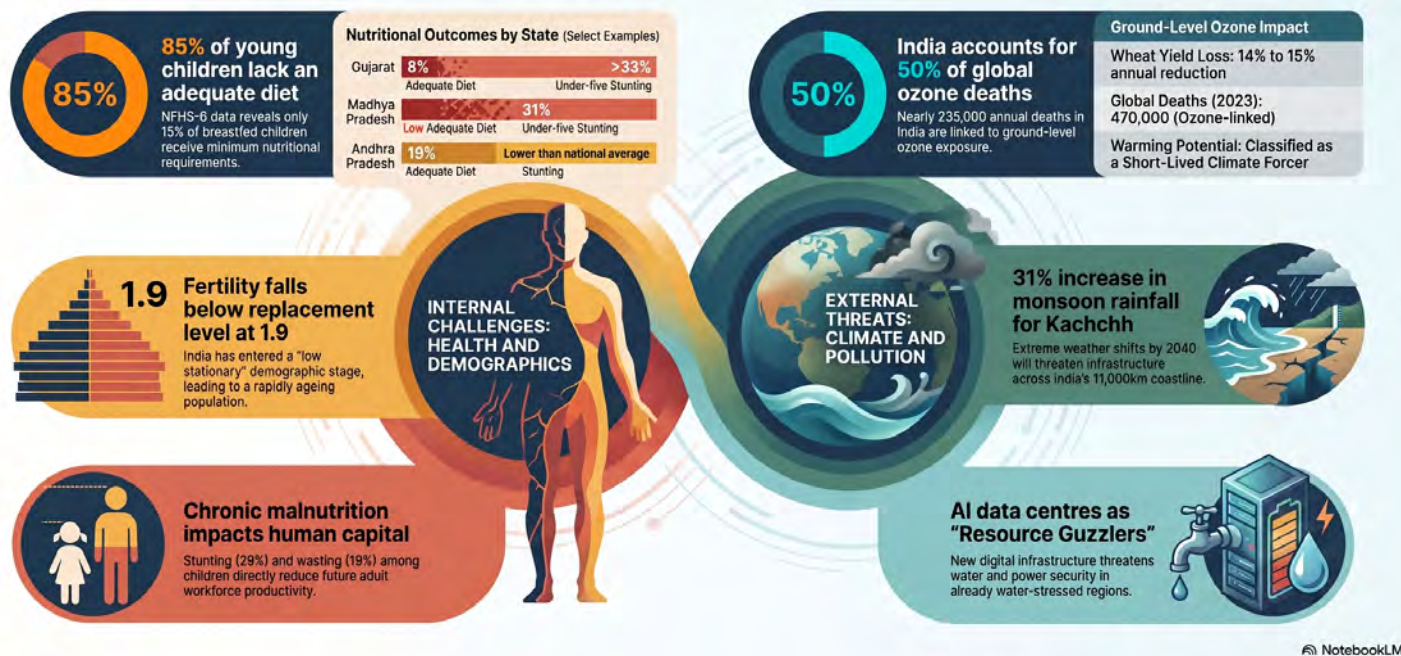
MCQ Practice: Q. According to climate projections for 2040, which Indian coastal region is expected to face declining Southwest Monsoon rainfall and water scarcity? A) Western Coast (Gujarat) B) Eastern Coast (Odisha and West Bengal) C) Southern Coast (Kerala) D) Konkan Coast **Answer: B** (While the west coast gets wetter, the eastern coast, including the ecologically sensitive Sunderbans, is projected to see a decline in monsoon rainfall.)



Topic 3: India's Falling Fertility Rate: Demographic Transition and its Implications

India 2040: Navigating Emerging National Risks

India faces a complex convergence of internal demographic shifts and external environmental threats, challenging human capital, food security, and public health.



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[Visual Element: A table charting the Demographic Transition Model stages alongside India's historical TFR decline from 6.0 in the 1950s to 1.9 in 2024.]

Summary: India's Total Fertility Rate (TFR) has fallen to 1.9, dipping below the replacement level of 2.1, marking a rapid shift into Stage 4 of the Demographic Transition Model. This decline yields an immediate demographic dividend but poses long-term challenges related to an ageing population.

Background: TFR indicates the average number of children a woman is expected to have during her reproductive years. According to the Sample Registration System (SRS) Statistical Report 2024, India's transition is driven by rising female education, urbanisation, delayed marriages, and improved healthcare.

Key Points:

- **State-wise Disparities:** Bihar has the highest TFR (2.9), remaining in the late Stage 3 transition, while Delhi has the lowest (1.2), showing characteristics closer to Stage 5.



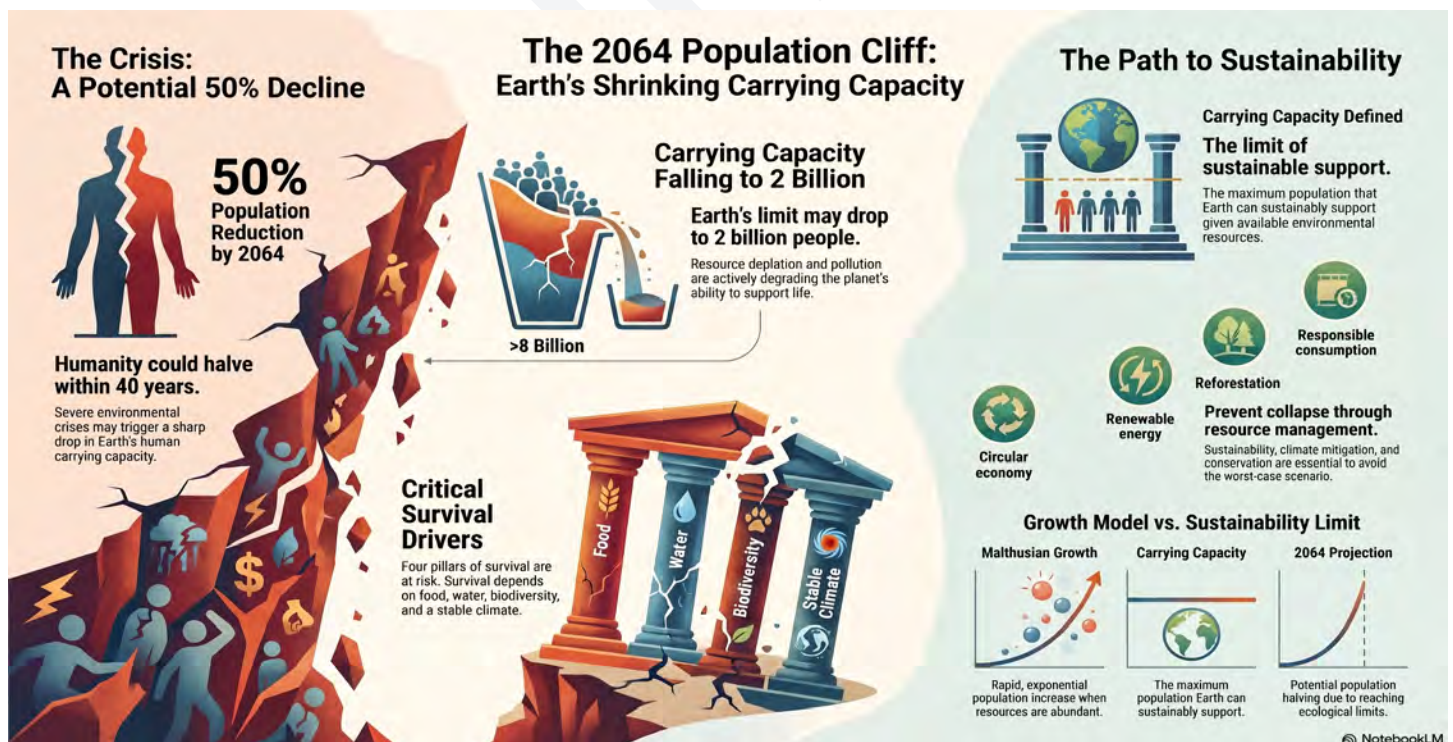
- **Demographic Dividend vs. Burden:** Lower dependency ratios currently enhance productivity and human development. However, future challenges include a shrinking workforce, rising fiscal costs for healthcare, and an ageing population requiring pensions.
- **Policy Imperatives:** India must invest in human capital to harness the closing demographic dividend, while concurrently preparing geriatric infrastructure to support the eventual ageing population.

Prelims Facts (One Liners):

- India's Total Fertility Rate (TFR) as per the SRS Statistical Report 2024 is 1.9.
- Replacement-level fertility, which allows a population to replace itself without migration, is considered 2.1.

MCQ Practice: Q. Which stage of the Demographic Transition Model (DTM) is characterised by low birth rates, low death rates, and a stable population, representing India's current general position?
A) Stage 1 B) Stage 2 C) Stage 3 D) Stage 4 **Answer: D** (Stage 4, "Low Stationary", aligns with India's current low birth and death rates, though some states vary.)

Topic 4: Global Population Crisis: Can Humanity Halve by 2064?



Summary: A new mathematical study suggests that severe environmental crises could rapidly reduce Earth's carrying capacity, potentially halving the global population by 2064. The research underscores the direct link between unchecked ecological degradation and human survival.

Background: The study develops a single nonlinear rate-feedback equation to explain 12,000 years of population growth (Malthusian, Verhulst, Von Foerster). It tests a worst-case scenario where environmental stress drastically alters Earth's sustainability limits.

Key Points:

- **Carrying Capacity Constraints:** Human survival depends on food, water, biodiversity, and a stable climate. Resource depletion, pollution, and climate change are actively degrading these limits.
- **Drastic Decline Scenario:** In a conservative but severe scenario, if environmental degradation reduces Earth's carrying capacity to around 2 billion people, humanity's population could halve by the mid-21st century.
- **Significance:** While not an inevitable prediction, the model serves as an urgent call for sustainable resource management, climate mitigation, and conservation to prevent systemic ecological collapse.

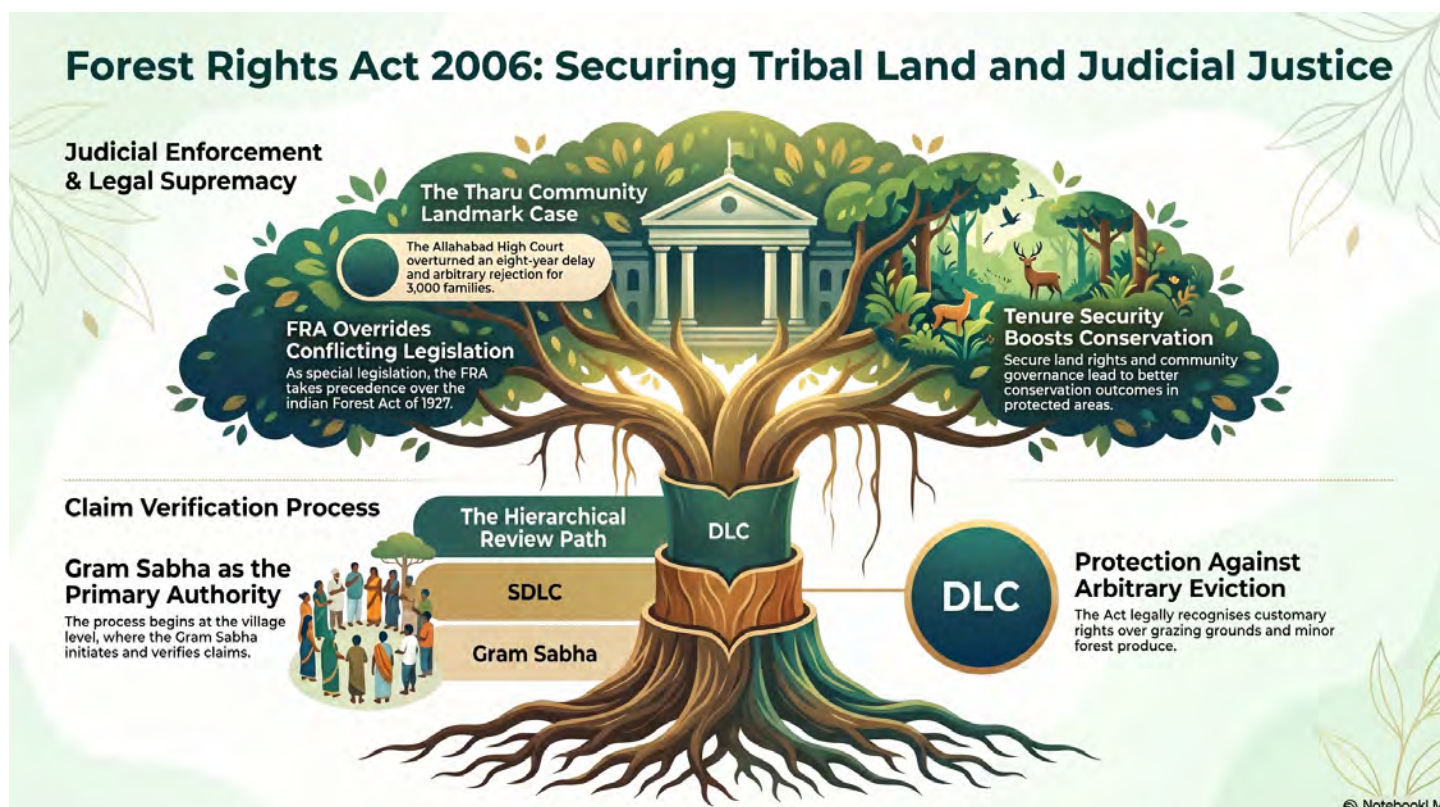
Prelims Facts (One Liners):

- Carrying Capacity refers to the maximum population that the Earth can sustainably support.
- Malthusian Growth describes rapid, exponential population increase when resources are abundant.

MCQ Practice: Q. In population dynamics, what does "Carrying Capacity" refer to? A) The minimum population required for economic growth B) The maximum population that the Earth can sustainably support C) The rate of technological advancement D) The total area of arable land **Answer: B** (It represents the maximum sustainable population given the available environmental resources.)



Topic 5: Forest Rights Act and Judicial Enforcement



Summary: The enforcement of the Forest Rights Act (FRA), 2006, continues to face hurdles as district-level bodies often arbitrarily reject tribal claims. Recent judicial interventions, such as the Allahabad High Court's ruling on the Tharu community case, highlight the critical need for due process and adherence to the Act's restorative purpose.

Background: Enacted to correct historical injustices against Scheduled Tribes (STs) and traditional forest dwellers, the FRA grants legal recognition to customary forest rights. Claims are processed through the Gram Sabha, SDLC, and DLC.

Key Points:

- **Procedural Violations:** Claims from 3,000 Tharu families were pending for eight years before the DLC rejected them, incorrectly citing a 2000 Supreme Court interim order. The Allahabad High Court set this aside, mandating a fair hearing.
- **Legal Precedence:** Being a later, special, and rights-based legislation, the FRA overrides conflicting provisions in older laws like the Indian Forest Act, 1927, and the Forest (Conservation) Act, 1980.





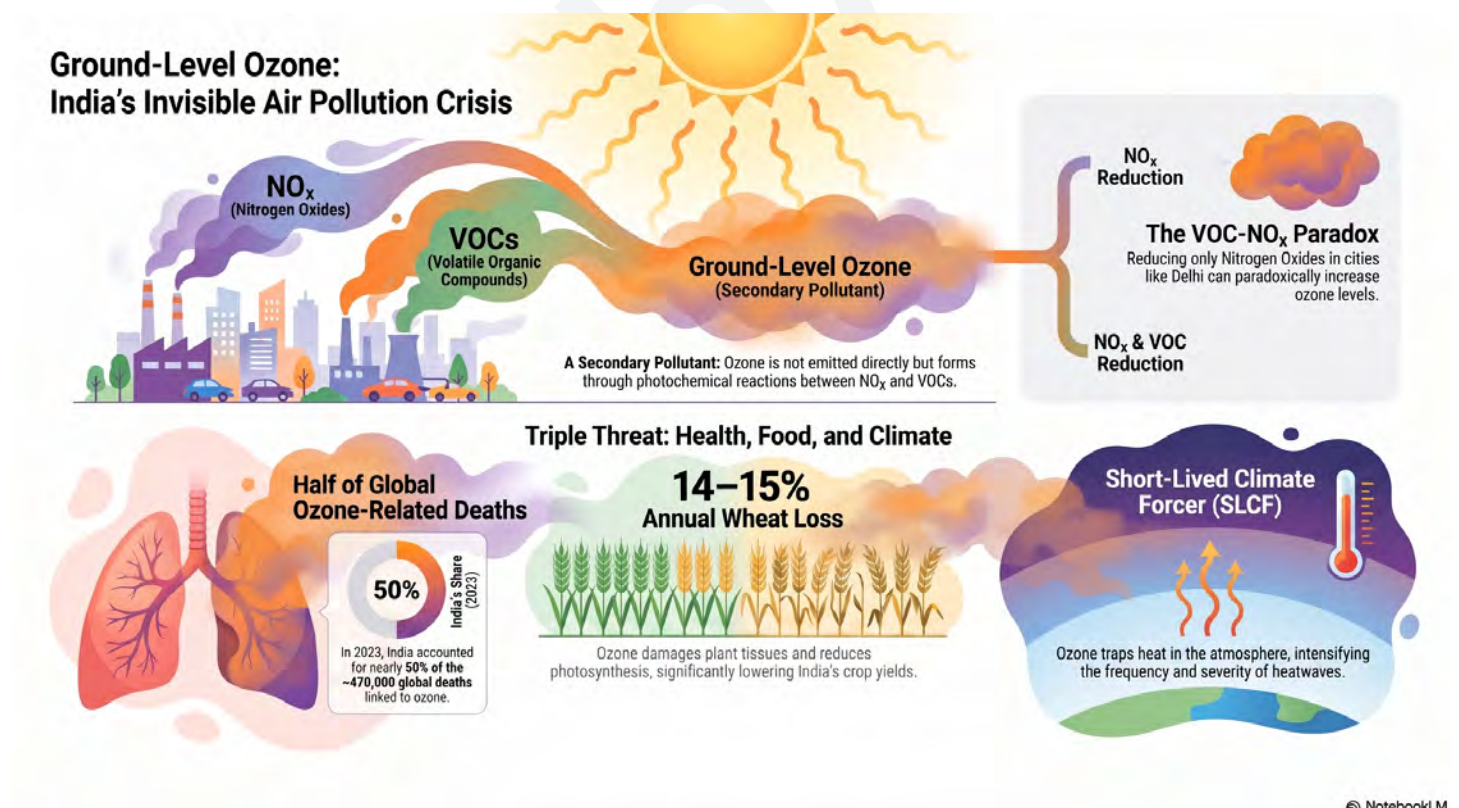
- **Conservation Debate:** Authorities often view FRA as competing with conservation. However, research indicates that secure tenure and Gram Sabha-led governance actually improve conservation outcomes in Tiger Reserves and Sanctuaries.

Prelims Facts (One Liners):

- Under the FRA 2006, the Gram Sabha is the primary authority for initiating and verifying forest rights claims.
- The Act protects against arbitrary eviction and grants rights over minor forest produce and grazing grounds.

MCQ Practice: Q. Under the Forest Rights Act 2006, which body is designated as the primary authority to initiate the process of determining forest rights? A) Sub-Divisional Level Committee B) Forest Department C) Gram Sabha D) District Level Committee **Answer: C** (The Gram Sabha initiates the process by receiving, verifying, and passing resolutions on claims.)

Topic 6: Ground-Level Ozone: India's Emerging Air Pollution Challenge



Summary: Ground-level ozone is emerging as a critical, "invisible" air pollutant in India, severely impacting human health, food security, and climate stability. Its formation is accelerating due to the complex interplay of vehicular/industrial emissions and climate-change-induced heatwaves.

Background: Unlike protective stratospheric ozone, ground-level (tropospheric) ozone is a harmful secondary pollutant. It forms through photochemical reactions of Nitrogen Oxides (NO_x) and Volatile Organic Compounds (VOCs) under intense sunlight.

Key Points:

- **Health and Climate Threat:** Classified as a Short-Lived Climate Forcer (SLCF), ozone traps heat and intensifies heatwaves. Ozone exposure was linked to nearly half of the 470,000 global deaths in 2023 occurring in India.
- **The VOC-NO_x Trap:** Cities like Delhi and Mumbai are often "VOC-limited" (NO_x-saturated). Paradoxically, reducing only NO_x without controlling VOCs can *increase* ozone levels, requiring simultaneous reduction strategies.
- **Threat to Agriculture:** Ambient ozone damages plant tissues, forcing stomata to close and reducing photosynthesis. It reduces India's wheat yields by an estimated 14–15% annually.

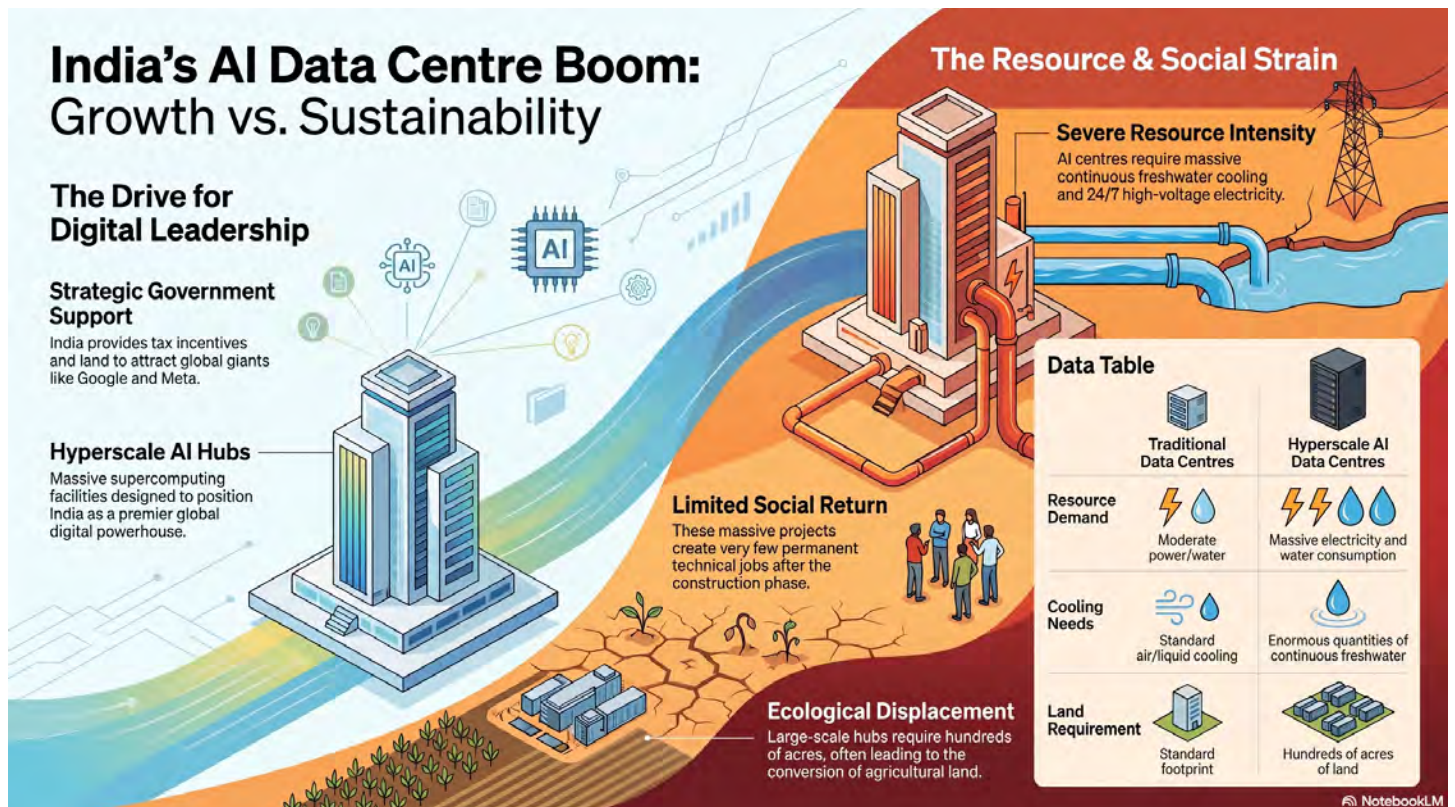
Prelims Facts (One Liners):

- Ground-level ozone is a secondary pollutant, meaning it is not directly emitted from any single source.
- The IPCC classifies ground-level ozone as a Short-Lived Climate Forcer (SLCF) with a high warming potential.

MCQ Practice: Q. Why is ground-level ozone classified as a secondary pollutant? A) It is emitted only by secondary industries B) It forms in the atmosphere through chemical reactions of precursors like NO_x and VOCs C) It only affects secondary crops D) It is imported from other countries **Answer: B** (Ozone is not directly emitted; it forms when NO_x and VOCs react in the presence of sunlight and heat.)



Topic 7: AI Data Centres in India: Opportunities and Challenges



Summary: India is rapidly promoting AI data centres to position itself as a global digital hub, attracting major hyperscale investments. However, these massive facilities act as environmental guzzlers, threatening to aggravate local water scarcity and electricity demand in an already resource-stressed nation.

Background: AI models require massive computing power. The Indian government provides tax incentives, land, and policy support to attract giants like Google, Meta, and Adani Group to build these giant supercomputing hubs.

Key Points:

- **Severe Resource Intensity:** Unlike traditional servers, AI data centres require enormous quantities of fresh water for continuous cooling and operate 24/7 on massive electricity, which may increase reliance on thermal power.
- **Ecological and Social Impact:** Large projects consume hundreds of acres, raising concerns over agricultural land conversion and ecological damage, while producing relatively few permanent technical jobs post-construction.



- **Regulatory Needs:** To prevent digital growth from undermining environmental security, policies must mandate water audits, green cooling technologies, and rigorous Environmental Impact Assessments (EIAs).

Prelims Facts (One Liners):

- AI Data centres function as giant AI supercomputing hubs requiring massive land, electricity, and continuous water cooling systems.
- Despite massive investments, hyperscale data centres create relatively few permanent jobs, primarily requiring maintenance technicians.

MCQ Practice: Q. What is a primary environmental concern uniquely highlighted regarding hyperscale AI data centres in India? A) High emission of CFCs B) Massive continuous consumption of freshwater for cooling servers C) Extensive generation of radioactive waste D) Direct emission of ground-level ozone **Answer: B** (AI data centres require enormous quantities of water for cooling their intensive computing servers, straining local resources.)

Topic 8: Public Health Emergencies of International Concern (PHEIC)

Understanding the PHEIC: The Ebola Outbreak Response

The WHO has declared the Ebola outbreak in the Democratic Republic of the Congo and Uganda as a Public Health Emergency of International Concern (PHEIC), triggering a massive shift in global surveillance and disease management.



Summary: The WHO has declared the ongoing Ebola outbreak in the Democratic Republic of the Congo (DRC) and Uganda as a Public Health Emergency of International Concern (PHEIC). This alert triggers urgent global coordination, surveillance, and response to prevent international spread.

Background: Governed by the International Health Regulations (IHR) 2005, a PHEIC is the WHO's highest public health alert for extraordinary events posing an international public health risk.

Key Points:

- **Ebola Characteristics:** Ebola Virus Disease (EVD) is transmitted via infected bodily fluids or animals. It causes severe fever, fatigue, and internal bleeding, carrying a high case-fatality rate.
- **Global Alert Mechanism:** A PHEIC declaration enhances international coordination and mandates countries to strengthen their disease surveillance, preparedness, and reporting mechanisms.
- **India's Preparedness:** To safeguard public health security, India must reinforce the Integrated Disease Surveillance Programme (IDSP) and National Centre for Disease Control (NCDC), adhering to a "One Health" approach integrating human, animal, and environmental health.

Prelims Facts (One Liners):

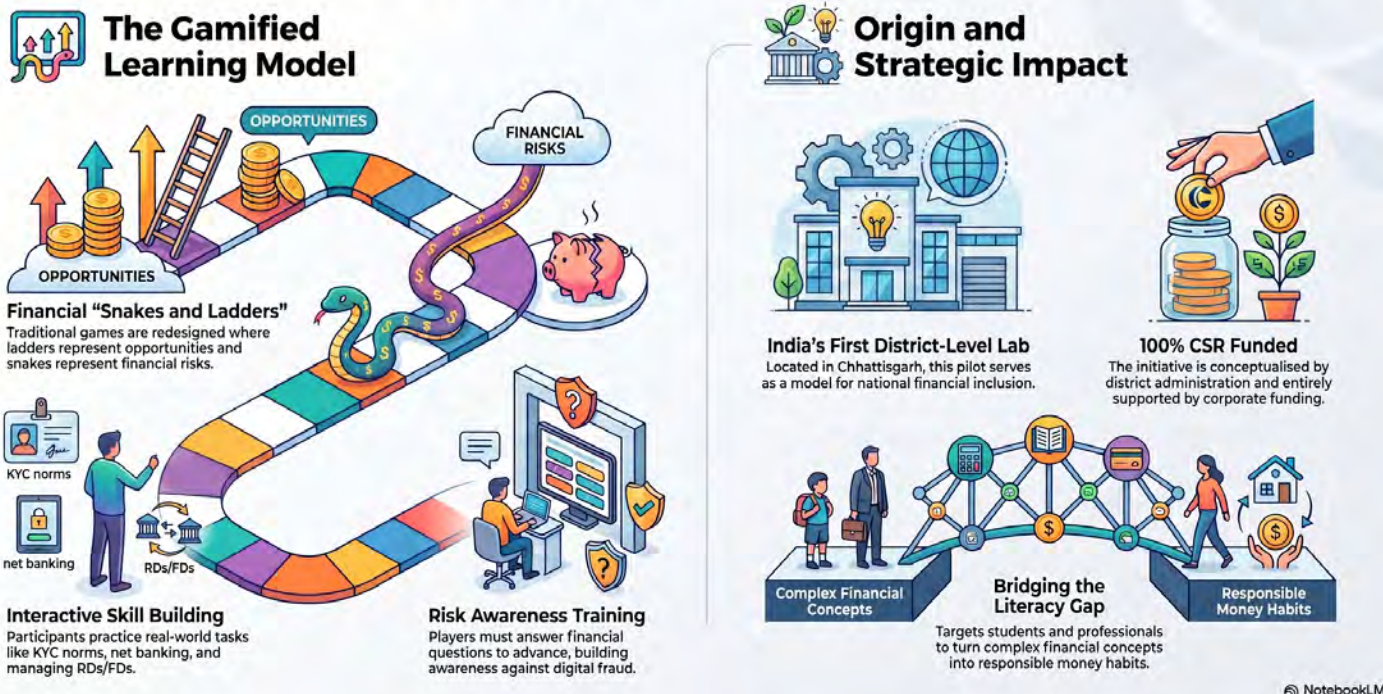
- The International Health Regulations (IHR) 2005 is the legally binding agreement under which the WHO declares a PHEIC.
- Ebola Virus Disease is zoonotic, transmitted through contact with infected animals, surfaces, or bodily fluids.

MCQ Practice: Q. Under which legally binding international agreement does the WHO declare a Public Health Emergency of International Concern (PHEIC)? A) Paris Agreement B) International Health Regulations (IHR) 2005 C) Geneva Conventions D) Alma-Ata Declaration **Answer: B** (The IHR 2005 is the framework under which WHO Member States coordinate responses to global health emergencies.)



Topic 9: Arthshala, A 'Finance Laboratory' in Chhattisgarh

Arthshala: India's First Gamified Finance Laboratory



Summary: 'Arthshala', established in Chhattisgarh's Baloda Bazar-Bhatapara district, is India's first district-level finance laboratory. It uses innovative game-based learning to promote financial literacy, enhance banking inclusion, and build awareness against financial fraud.

Background: Funded entirely through Corporate Social Responsibility (CSR) and conceptualized by the local district administration, the initiative targets students, professionals, and the general public to bridge the gap between financial theory and real-world practice.

Key Points:

- **Gamified Learning:** It redesigns traditional games like Snakes and Ladders to teach complex concepts. Ladders symbolize financial opportunities, while snakes represent risks, requiring players to answer finance questions to advance.
- **Practical Skill Building:** Participants receive hands-on training in KYC norms, digital transactions, net banking, and managing Recurring/Fixed Deposits (RDs/FDs).



- **Socio-Economic Impact:** The model aligns with national goals of Financial Inclusion and Consumer Protection, preventing fraud while empowering citizens with responsible money management habits.

Prelims Facts (One Liners):

- Arthshala is India's first district-level finance laboratory, located in Baloda Bazar-Bhatapara, Chhattisgarh.
- The initiative operates entirely on Corporate Social Responsibility (CSR) funding.

MCQ Practice: Q. Arthshala, an innovative 'finance laboratory' aimed at gamifying financial education, was established in which state? A) Kerala B) Telangana C) Chhattisgarh D) Rajasthan
Answer: C (It was established in the Baloda Bazar-Bhatapara district of Chhattisgarh using CSR funding.)

Topic 10: Sarus Crane

The Sarus Crane:

Uttar Pradesh's Vulnerable Giant

THE WORLD'S TALLEST FLYING BIRD



The Sarus crane (*Antigone antigone*) is globally recognised for its immense height and stature.



IUCN STATUS: VULNERABLE

It is officially listed as Vulnerable on the IUCN Red List of Threatened Species.



UTTAR PRADESH'S STATE ICON

Populations have soared in eastern Uttar Pradesh due to active conservation efforts by local farmers.



HABITAT & SURVIVAL RISKS

WETLAND-DEPENDENT OMNIVORES

They rely on flooded agricultural fields for a diet of aquatic plants, insects, and frogs.

MAJOR ENVIRONMENTAL THREATS



Wetland degradation



Power-line electrocution



Agricultural intensification

NotebookLM



Summary: Active involvement of farmers in conservation has helped the Sarus crane population soar in eastern Uttar Pradesh over the past decade. As the world's tallest flying bird, its survival is intricately linked to healthy wetlands and agricultural landscapes.

Background: The Sarus Crane is the state bird of Uttar Pradesh. Its population is primarily concentrated in India, with fragmented populations occurring in Nepal, Southeast Asia, and Australia.

Key Points:

- **Habitat and Diet:** They are omnivorous, feeding on aquatic plants, seeds, insects, and frogs, heavily relying on wetlands and flooded agricultural fields across the subcontinent.
- **Conservation Status:** The bird is listed as "Vulnerable" on the IUCN Red List.
- **Primary Threats:** Major risks include wetland degradation, agricultural intensification, power-line electrocution, and changing land-use patterns.

Prelims Facts (One Liners):

- The Sarus crane (*Antigone antigone*) is the tallest flying bird in the world.
- Its IUCN Red List conservation status is Vulnerable.

MCQ Practice: Q. What is the IUCN Red List conservation status of the Sarus Crane, the state bird of Uttar Pradesh? A) Critically Endangered B) Endangered C) Vulnerable D) Near Threatened

Answer: C (The Sarus Crane is classified as Vulnerable due to threats like wetland loss and power-line collisions.)

