UPSC Daily Current Affairs| Prelim Bits 09-05-2025

Piprahwa Gems

Prelims – History of India.

Mains – *General Studies-I* (Indian Heritage and Culture).

Why in news?

The Indian government has recently condemned an auction of ancient Indian gems and issued a legal notice to stop the "unethical" sale of the relics, stating that it should be treated as the sacred body of the Buddha.

- Piprahwa Gems date back to the *Mauryan Empire*, circa 240 to 200 BC.
- The precious stones consist of thousands of pearls, rubies, topazes, sapphires and patterned gold worked into jewels and maintained in their natural forms.
- They were *originally buried in a dome-shaped funeral monument called a stupa in Piprahwa in modern-day Uttar Pradesh*.
- They are believed to be mixed with some of the cremated remains of the Buddha, who died about 480 BC.

William Peppe

- In 1898, William Peppe's archaeological discovery was claimed by the British under the 1878 Indian Treasure Trove Act, reflecting colonial-era laws.

  The 1878 Indian Treasure Trove Act establishes the legal framework for buried wealth. Treasure is defined as "something of any value hidden in the soil, or in anything affixed thereto, "It only applies to riches that have been buried for less than 100 years.

- The relics, including bones and ash, were presented to King Chulalongkorn of Siam (modern Thailand), highlighting diplomatic engagements of the time.
- The majority of the approximately 1,800 gems found are now part of the Indian Museum in Kolkata, an important institution for Indian heritage.
- Notably, *Peppe retained about a fifth of the gems*, categorized as "duplicates" by British administrators, a decision indicative of the colonial administration's handling of such finds.

Stance of the Indian Government

- Indian government argued that the Piprahwa gems are the heritage of both the

Buddha's descendants and of Buddhists worldwide.

- India's government has called on Chris Peppe to halt the sale of the gems, issue a public apology to Buddhists worldwide and to provide a full disclosure of the provenance of the relics.
- Failure to comply, would result in legal proceedings in Indian and Hong Kong courts and through international bodies "for violations of cultural heritage laws".
- The Ministry noted that "the relics of the Buddha cannot be treated as 'specimens' but as the sacred body and originally interred offerings to the sacred body of the Buddha" and the proposed auction "offends the sentiments of over 500 million Buddhists worldwide".

Reference

1. The indian express | Piprahwa relics
2. Al Jazeera | Piprahwa Gems

Human Development Index (HDI)

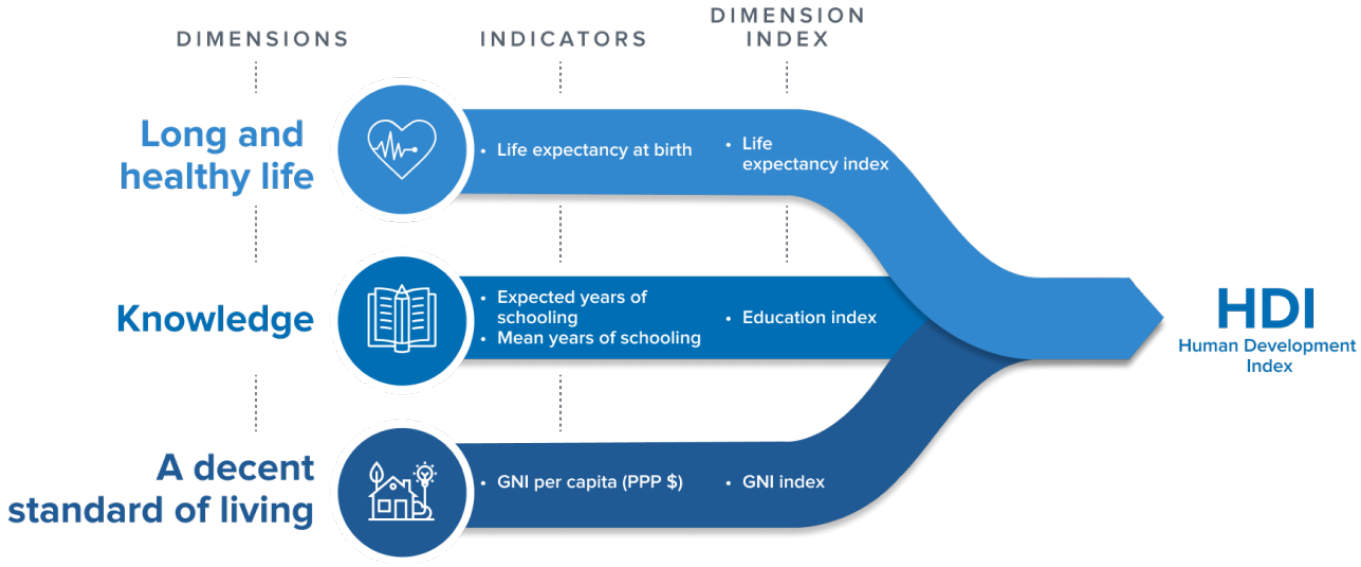
Prelims – Current events of national and international importance | Indian Polity and Governance | Economic and Social Development-Sustainable Development.

Mains – *General Studies- II* (Issues relating to development and management of Social Sector/Services relating to Health, Education, Human Resources | Important aspects of governance, transparency and accountability, e-governance)

Why in news?

The Human Development Index (HDI), 2025 was recently released by the United Nations Development Programme.

- **HDI** – Is a summary measure of average achievement in 3 key dimensions of human development, including:
    1. A long and healthy life
    2. Being knowledgeable
    3. Having a decent standard of living
- It is released by the ***United Nations Development Programme (UNDP)***.



- **India** – India has ranked 130 out of 193 countries in the 2025 edition of HDI.
- India's HDI value increases from 0.676 in 2022 to 0.685 in 2023, placing the country in the *medium human development category*.
- India's latest HDI score of 0.685 is comparable to its neighbours Bangladesh (0.685), and higher than Nepal (0.622) and Pakistan (0.544).

Key Findings of the 2025 Human Development Report on India

- **Life Expectancy** – India's life expectancy rose *from 58.6 years in 1990 to 72 years in 2023*, the highest ever recorded.
- **Education Gains** – Expected years of schooling *increased to 13 years* (from 8.2 in 1990), but quality remains a concern.
- **Income Growth** – GNI per capita significantly increased to USD 9046.76 (2023 PPP) from USD 2167.22 (1990), contributing to 135 million escaping multidimensional poverty (2015-21).
- **High Inequality** – India faces significant inequality (30.7% HDI loss), particularly in income and gender, despite improvements in health and education.
- **AI Leadership** – *India is a leading AI hub* with the highest self-reported skills penetration and increasing domestic talent retention, leveraging AI for inclusive growth across sectors.
- **Global Slowdown Impact** – India is part of a global trend of slower human development progress, risking delays in achieving very high development levels.
- **AI as a Choice** – The report emphasizes that AI's impact depends on policy choices, requiring a focus on human augmentation, needs, and values to prevent deepening inequalities.

Reference

1. UNDP | HDI
2. UNDP | HDI

Gene Editing using CRISPR

Prelims: *Science and Technology | Current events of national and international importance*

Why in News?

Recently, India has developed the world's first-ever genome-edited rice varieties.

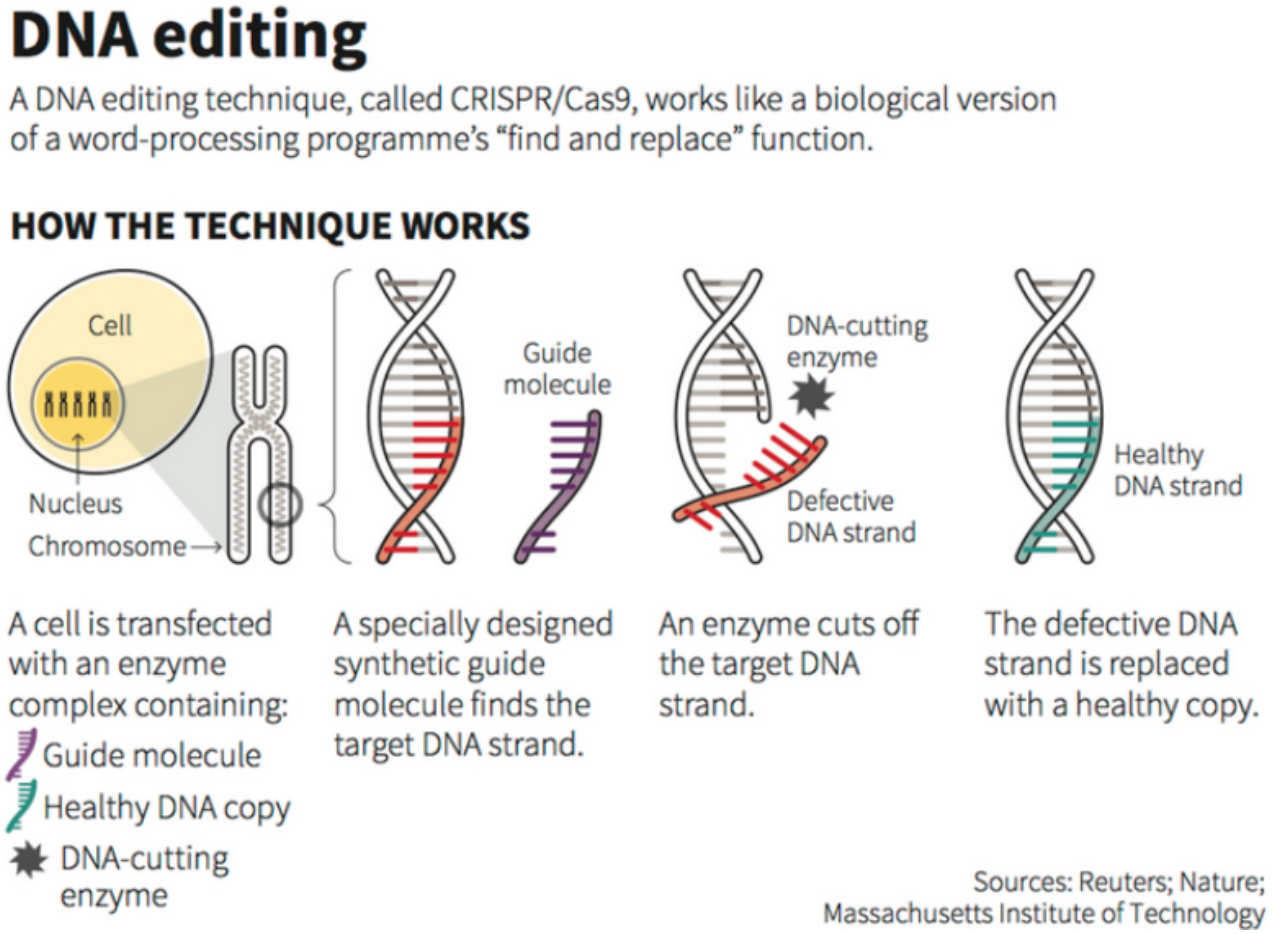
- **Gene editing** – It entails mere ***"editing" of genes naturally present in the host species***, leading to mutation or changes in their DNA sequence.
- *No foreign genes or DNA* are incorporated.

> *A **gene** is the basic physical and functional unit of heredity. Genes are made up of DNA. Some genes act as instructions to make molecules called proteins, which are needed for the body to function. However, many genes do not code for proteins, instead they help control other genes.*

- **Recent technology** – Targeted genome editing using "CRISPR/Cas9" (Clustered regularly interspaced short palindromic repeats/***CRISPR-associated protein 9***).
- It was originally identified and adapted from a naturally-occurring immunity mechanism *in bacteria*, which is employed against invading viruses.

Gene Editing by Bacteria
• The bacteria basically capture snippets of DNA from the viruses and use them to ***create CRISPR arrays***. • These DNA segments allow the bacteria to "*remember" the viruses*. • In the event of the viruses attacking, the bacteria *produce RNA* (messenger that carries genetic information from the DNA) from the CRISPR arrays. • The bacteria then use ***Cas9 enzyme, which acts as a pair of "molecular scissors",*** to cut the DNA apart and disabling the virus.

- **Working** – Technology involves to *produce RNA complementary to a specific target DNA sequence* in the genome of an organism.
- This ***"guide" RNA*** binds itself only to that target sequence and no other regions of the genome.
- The Cas9 enzyme will, in turn, follow the guide RNA and cut the 2 strands of DNA at the targeted location.
- At this stage, the cell knows that the DNA is damaged and tries to repair it.



- Such genome editing using CRISPR/Cas9 is possible through 3 different approaches - **Site-Directed Nuclease (SDN) 1, 2 and 3.**
- The researchers can now use the natural DNA repair machinery to introduce changes, including by adding or deleting genetic material.

Gene Modification

- It is different from Gene Editing.
- It involves ***introduction of genes from unrelated species*** into host plants.
    - For example, be genes from Bacillus thuringiensis, a soil bacterium, that code for the production of proteins toxic to various insect pests in cotton.

Reference

PIB| Gene Editing using CRISPR Technology

2025 Access and Benefit Sharing Regulation

Prelims: Bio-diversity | Current events of national and international importance

Why in News?

The National Biodiversity Authority has released a new set of rules to manage sharing of benefits generated through the use of biological resources.

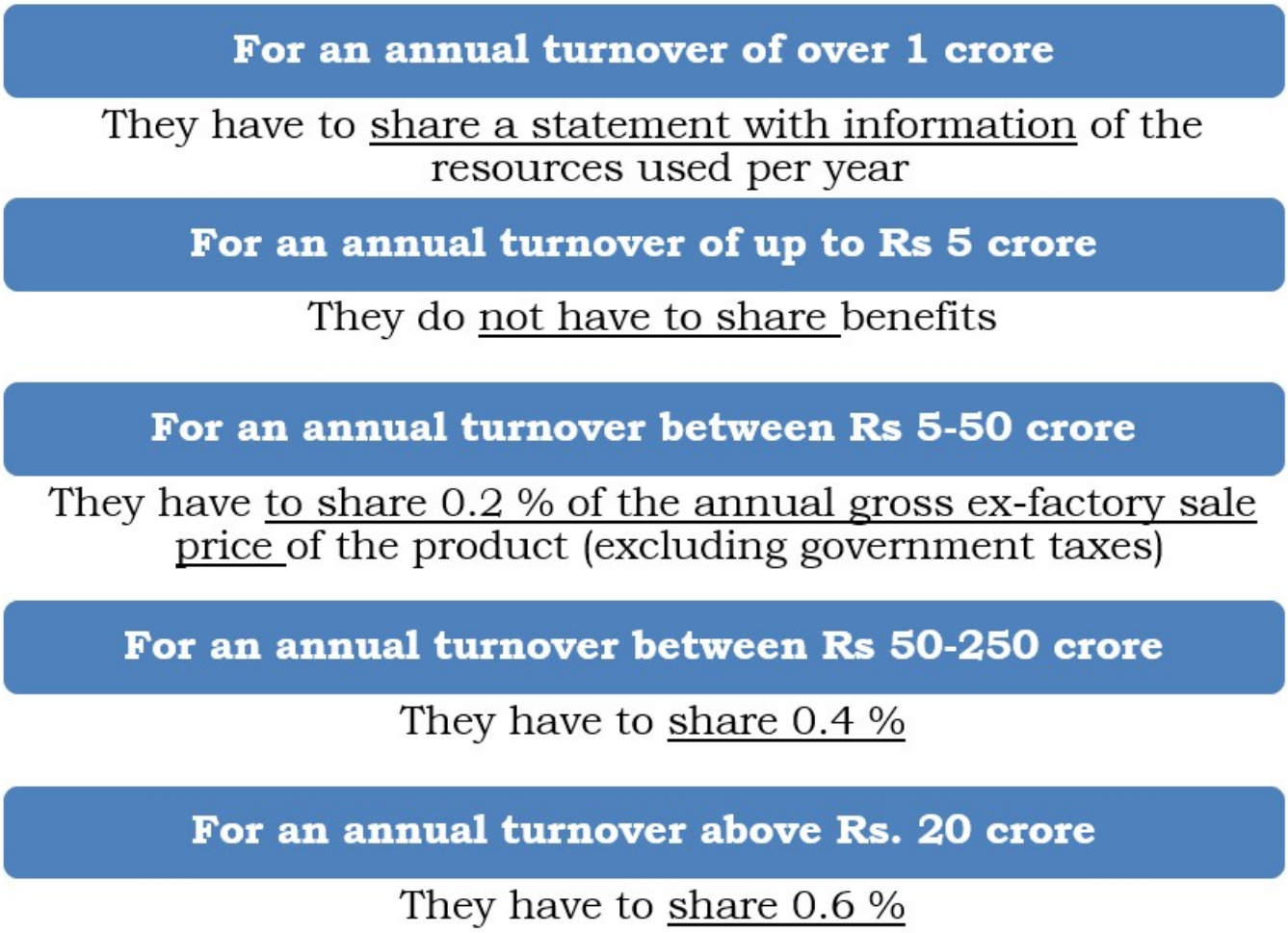
- **New regulation** – The *Biological Diversity* (Access to biological Resources and

Knowledge Associated thereto and Fair and Equitable Sharing of Benefits) Regulation 2025.

- It will guide the sharing of benefits for the use of biological resources, ***including digital sequence information*** associated with it.
- It puts in place, the requirements for *benefit sharing by researchers* and for those who want to apply for intellectual property rights.
- It also outlines how benefits would be shared with the claimants.

Biological Diversity Regulation 2025 replaces 'The Guidelines on Access to Biological Resources and Associated Knowledge and Benefits Sharing Regulations 2014', which did not include digital sequence information in the ambit of genetic resources.

- **Benefit sharing slabs** – It has set ***slabs based on the annual turnover*** of the person or the industry accessing the resource.



- **For high conservation or economic value resources** - The benefit *sharing shall not be less than 5 % of the proceeds* of the auction or sale amount or the purchase price.
  - For example, red sanders, sandalwood, agarwood and threatened species notified under Biodiversity Act 2002.
- The benefit sharing component could go *up to more than 20 % in case of commercial use.*

- **Exemptions** - The extent of benefits the medicine manufactures would need to share is not clear as the Regulation ***exempts users of cultivated medicinal plants.***
    - **Top companies** – Patanjali, Baidyanath, Dabur India
- It is in line with the controversial *Biological Diversity (Amendment) Act 2023*, which had replaced the Biological Diversity Act of 2002.
- 2025 notification indicates that *in case a product contains both cultivated and uncultivated plants,* benefits would not need to be shared on products identified.
- **Fund collected** - Of the total collected, around *10-15 % would be retained by the National Biodiversity Authority.*

Quick facts

- **Benefit sharing on the use of digital sequence information** - A multilateral mechanism for sharing benefits accrued from the use of digital sequence information was put in place *during COP16 of the Convention on Biological Diversity in Cali, Colombia*, last year.
    - Users of biodiversity such as *pharmaceuticals, cosmetics, agriculture, and the biotechnology industry*.
- **National Biodiversity Authority** – It was established in 2003 to implement India's Biological Diversity Act (2002).
- It is a statutory body and that performs facilitative, regulatory and advisory function for Government of India on issue of *Conservation, sustainable use of biological resource and fair equitable sharing* of benefits of use.

References

Down to Earth| Notification of Access and Benefit Sharing Regulation 2025

Revised SHAKTI Policy

Why in News?

The Cabinet Committee on Economic Affairs has approved grant of fresh coal linkages to Thermal Power Plants of Central Sector/State Sector/ Independent Power Producers (IPPs) through revised SHAKTI policy.

- **SHAKTI** - Scheme for Harnessing and Allocating Koyala Transparently in India.
- **Introduced in** – 2017.
- **Aim** – To allocate ***coal linkages through an auction / tariff-based bidding*** instead of nomination-based allocation.

> *Central Sector Thermal Power Projects (TPPs) shall continue to get coal linkage on nomination basis on the recommendation of Ministry of Power, whereas, the linkages earmarked to the States on nomination basis on the recommendation of Ministry of Power may be utilized by the States in the State Generating Company.*

- **Revised SHAKTI policy** – *2 windows* have been proposed for coal linkages with thermal power plants.
    - **Window-I -** Coal linkage at notified price
    - **Window-II -** coal linkage at premium above notified price
- **Expenditure** – It would *not involve any additional cost* to the coal companies.
- **Number of beneficiaries** – Thermal Power Plants, Railways, Coal India Limited / Singareni Collieries Company Limited, End Consumers and State Governments would be benefitted.
- **Implemented by** - Coal India Limited (CIL)/ Singareni Collieries Company Limited (SCCL).
- **Advantages**
    - Simplification of the linkage process
    - Caters to the dynamic coal requirement of the Power Sector
    - Providing the power plants the flexibility to sell the electricity as per their choice.
    - Enabling Independent Power Producers (IPPs)/Private Developers for thermal capacity addition
    - *Promote Coal Import Reduction*/Substitution
    - Preference to 'Pithead' power plants

The revised SHAKTI Policy, besides supporting Brownfield expansion, will promote setting up of Greenfield Thermal Power Projects primarily at ***pithead sites*** (nearer to the coal source).

    - *Reduce tariff for electricity consumers*.
    - Provides for *delegation of powers* for enabling minor changes, in the policy, at the level of concerned Ministries.

Reference

PIB| Notification of Revised SHAKTI Policy

One Liners 08-05-2025

History, Art and Culture

Commemorate the 300th birth anniversary of Ahilyabai Holkar,

Recently, Maharashtra announced it will produce a multilingual biopic on Ahilyabai Holkar's life for her 300th birth anniversary, showcasing her governance and welfare contributions on Doordarshan and OTT.

• **Aims to** - Raise awareness about India's female historical figures, and popularize her contributions to governance, welfare, architecture, and culture.

About Ahilyabai Holkar

• **Born on** - May 31, 1725, in Chondi, Maharashtra, she was reverently known as 'Punyashlok Ahilyabai'.

• **Reign and Rule -** She ruled the Malwa region after the demise of her husband and father-in-law, known for her progressive and just governance.

• **Public Welfare Focus -** Ahilyabai championed public welfare, undertaking extensive works and funding the restoration of numerous Hindu temples across India.

• **Military Leadership -** She was a capable commander, leading armies alongside Tukoji Rao Holkar to protect her kingdom from invasions.

World Red Cross Day (WRCD)

annually on May 8th, honoring the global humanitarian network and its dedicated volunteers and staff.

• **Honoring Henry Dunant** - The date commemorates the birth anniversary of Henry Dunant (1828), the visionary founder of the International Committee of the Red Cross (ICRC).

• **RCD**- Is a global humanitarian organization dedicated to protecting human life and health, ensuring respect for all human beings, and preventing and alleviating human suffering. It is the most extensive humanitarian network worldwide.

• **Core Mission:** To alleviate human suffering, protect life and health, and uphold human dignity, especially during armed conflicts, natural disasters, and other emergencies.

• **The 2025 theme is** - "Keeping Humanity Alive," emphasizing selfless service.

• **The Tripartite Movement** - The International Red Cross and Red Crescent Movement comprises the ICRC (armed conflict focus), the IFRC (disaster relief coordination), and National Societies (local humanitarian action).

• **Global Significance** - World Red Cross Day raises awareness about the Movement's core principles and encourages public support and engagement in humanitarian activities worldwide.

Geography

Poonch

Pakistan's retaliation after India's Operation Sindoor struck Poonch civilians, killing 12 and destroying property including a Gurudwara. "**All Eyes on Poonch**" reflects rising LoC tensions and calls for peace.

• **Location -** In the western part of Jammu and Kashmir, it shares border with the Line of Control (LoC), the de facto border between Indian- and Pakistani-administered Kashmir, on its north, west, and south.

• **Topography -** largely mountainous and undulating, formed by the southern slopes of the Pir Panjal range, which separates the Kashmir Valley from the Jammu region.

• **Rivers:** The Poonch River and its tributaries flow through the district.

• **History -** Dating back to ancient times. It was known as Dravabhisar around 326 BC during Alexander the Great's invasion.

• In the 7th century AD, the Chinese traveler Hiuen Tsang passed through Poonch and noted its fame for graphics, fine tea, and good horses.

Ancient Wildfire Evidence in Godavari Basin

Scientists recently discovered palaeofire (ancient wildfire) evidence from the Permian Period (250 million years ago) in India's Godavari Basin.

• **Palaeofires** - Preserved in geological records, are vital for understanding past vegetation, climate shifts, and coal formation across geological periods.

• **Advanced Analytical Techniques** - The research employed Palynofacies analysis, Raman Spectroscopy, Rock-Eval Pyrolysis, and FTIR Spectroscopy to examine microscopic organic matter and fossil charcoal.

• **Distinguishing Charcoal Origins** - A key finding was the successful differentiation between in situ (on-site) and ex situ (transported) charcoal, resolving a geological debate about charcoal origins in coal formations.

• **Stratigraphic Patterns and Fire Residues -** Rock layering analysis showed concentrated, well-preserved fire residues during sea-level drops (regressive phases) and dispersed, oxidised charcoal during sea-level rises (transgressive phases).

• **Permian Fire-Prone Earth** - High Permian atmospheric oxygen likely intensified wildfire frequency, influencing carbon cycling and offering insights for modern climate change strategies.

National Dam Safety Authority (NDSA) Flags Damage in KLIP Barrages

NDSA has reported "irreparable damage" to three barrages within Telangana's Kaleshwaram Lift Irrigation Project (KLIP).

• **Kaleshwaram Project** - The KLIP is a significant multi-purpose irrigation project on the Godavari River in Telangana.

• **Irrigation and Drinking Water Goals** - Designed to irrigate about 4.5 million acres across 20 Telangana districts (excluding Hyderabad and Secunderabad), it also aims to supply drinking water.

• **World's Largest Lift Irrigation** - Currently the world's largest multi-stage lift irrigation project, its upstream reach extends to the Pranhita-Godavari confluence.

• **Project Scope and Scale** - Comprising seven links and 28 packages over 500 km, its canal network spans over 1,800 km.

• **Water Allocation** - The project targets 240 TMC of water for irrigation, Hyderabad's municipal supply, industrial use, and drinking water for nearby villages.

Polity & Governance

Haryana's Artist Support Scheme Launched

Recently,Haryana government has introduced the “Pandit Lakhmi Chand Kalakar Samajik Samman Yojana” to provide financial assistance to senior artists and art scholars.

• **Monthly Honorarium Offered -** Eligible artists will receive a monthly honorarium of 10,000 under this initiative.

• **Target Beneficiaries -** The scheme aims to support senior artists with at least 20 years of dedication to fields like singing, acting, dance, drama, and visual arts.

• **Eligibility Requirements -** Applicants must be Haryana residents aged 60 or older with 20+ years in their art form. Income verification via Parivar Pehchan Patra (PPP) is required, with varying honorariums based on income.

• **Evaluation and Selection Process -** A special committee will assess applications based on artistic merit and financial need, ensuring deserving artists are selected as beneficiaries.

• **Expected Scheme Impact -** The yojana is anticipated to improve the financial well-being of senior artists, acknowledge their contributions, preserve cultural heritage, and foster artistic expression in Haryana.

Environment

Trespassing Threatens Bhimgad Sanctuary

Recently uncontrolled public trespassing into the ecologically vital Bhimgad Wildlife Sanctuary (BWS) in Khanapur taluk raises serious conservation concerns.

• **About Bhimgad Wildlife Sanctuary -** Established in Karnataka's Belgaum district in 2011 within the Western Ghats, the sanctuary is named after Shivaji's 17th-century Bhimgad Fort.

• **Ecological Connectivity and Hydrology -** BWS borders several other protected areas and serves as the headwaters for key rivers like Tillari, Malaprabha, and Mhadei.

• **Unique Bat Habitat -** The sanctuary harbors the Barapede caves, the only known breeding site for the endangered Wroughton’s Free-tailed Bat.

• **Diverse Flora and Fauna -** Featuring tropical and subtropical moist broadleaf forests, BWS is home to endangered species like the sloth bear and black panther, alongside diverse birdlife.

• **King Cobra Breeding Grounds -** Bhimgad's isolated rock formations provide crucial breeding habitats for the King Cobra, the world's longest venomous snake.

Yangtze Porpoise Decline Evidenced by Poetry

Recent research utilizing classical Chinese poetry reveals a significant decline in the distribution of the critically endangered Yangtze finless porpoise.

• **Historical Poetic** - Over 700 poems spanning 1,400 years, from the Tang to Qing Dynasties, mention the porpoise, indicating its historically widespread presence.

• **Mapping Distribution via Poems** - Researchers analyzed poems with location-specific information, finding that half contained crucial data for mapping the porpoise's historical range.

• **Staggering Range Contraction** - The study documented a 65% contraction in the porpoise's range since the Tang Dynasty, with a drastic 91% loss in tributaries and lakes.

• **Human Activities: Primary Driver -** Dam construction since the 1950s is identified as the main factor obstructing migration and severely reducing the porpoise's habitat.

• **Poetry as Ecological Data -** This research highlights the valuable ecological insights that historical art forms like poetry can provide regarding wildlife distribution and the impact of human activities.

Security

Operation Abhyas

Following a Ministry of Home Affairs (MHA) directive, recently Bengaluru held a significant civil defence mock drill, 'Operation Abhyas'.

• **Aim of 'Operation Abhyas' -** The primary objective was to enhance public awareness and improve emergency preparedness across various scenarios.

• **Mock Drill Activities -** The exercise included siren alerts, rescue operations from simulated debris, high-rise evacuations, firefighting demonstrations, and first-aid procedures.

• **Context: Heightened National Alert -** This drill occurred amidst a nationwide alert prompted by the recent terrorist attack in Pahalgam and increasing tensions between India and Pakistan.

Science

World Thalassaemia Day 2025

May 8th, marks World Thalassaemia Day.

• **Focusing** - Uniting Communities, Prioritizing Patients."

• **Observance Significance -** Thalassaemia is a group of inherited blood disorders characterized by the body making an abnormal form or inadequate amount of hemoglobin.

• **Hemoglobin -** Is the protein in red blood cells that carries oxygen. This can lead to anaemia and other complications

• **Key Objectives -** The day aims to promote awareness, encourage genetic screening, improve access to quality treatment, strengthen healthcare systems, build community support, and advocate for policy reforms.

• **Observance Origins -** Founded in 1994 by the Thalassaemia International Federation (TIF).

• **Global Impact -** Thalassaemia affects hemoglobin synthesis, with over 300,000 children born annually with significant forms of the disorder worldwide.

• **India faces** - a substantial burden with approximately 10,000 new cases and over 100,000 registered thalassaemia major patients each year.

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