Global Gender Gap Report 2023: WEF

For Prelims: Global Gender Gap Report 2023, [WEF](#), Global Gender Gap Index, [Gender Parity](#), [Local Governance.](#)

For Mains: Global Gender Gap Report 2023, Issues of Gender Inequality in Different Sectors.

Why in News?

Recently, 17th edition of the **Global Gender Gap Report 2023** has been released by the **[World Economic Forum (WEF)](#)**, evaluating the **status of Gender Parity** across 146 countries.

What is the Global Gender Gap Index?

- **About:**
    - It benchmarks countries on their progress towards **gender parity in four Key dimensions** with Submatrices.
        - Economic Participation and Opportunity
        - Educational Attainment
        - Health and Survival
        - Political Empowerment
    - On each of the four sub-indices as well as on the overall index the **GGG index provides scores between 0 and 1,** where 1 shows full gender parity and 0 is complete imparity.
    - It is the longest-standing index, **which tracks progress towards closing these gaps over time since its inception in 2006.**
- **Objectives:**
    - To serve as a **compass to track progress on relative gaps** between women and men on health, education, economy and politics.
    - Through this annual yardstick, the **stakeholders within each country are able to set priorities** relevant in each specific economic, political and cultural context.

What are the Key Findings?

- **Global Gender Gap Score:**
    - The global gender gap score in 2023 **stands at 68.4%**, indicating a modest improvement of 0.3% points compared to the previous year.
    - At the current rate of progress, it would take **131 years to achieve full gender parity,** showing a significant slowdown in the overall rate of change.
- **Top-Ranking Countries:**
    - Iceland has **maintained its position as the most gender-equal country** for the 14th consecutive year, with a gender **gap score of 91.2%.**
        - It is the only country to have closed over 90% of its gender gap.
    - Three other Nordic countries—Norway (87.9%), Finland (86.3%), and Sweden (81.5%)—join **Iceland in the top five rankings,** highlighting their strong commitment to

gender equality.

- **Health and Survival:**
  - The gender gap in health and survival has closed by 96% globally.
- **Political Empowerment:**
  - The political empowerment gender gap remains significant, with a closure rate of 22.1% globally and a projected timeline of 162 years to close the gap.
- **Educational Attainment:**
  - The gender gap in educational attainment **has closed by 95.2%,** with significant progress **made over the 2006-2023 period.**
  - The gender gap in educational attainment is projected to close in 16 years.
- **Economic Participation and Opportunity:**
  - The gender gap in economic participation and opportunity **stands at 60.1% globally,** highlighting the persistent challenges in achieving gender equality in the workforce.
  - The gender gap in economic participation and **opportunity is projected to close in 169 years.**

How has India Fared in the Gender Gap Report 2023?

- **India's Rank:**
  - India has made significant progress, **rising from 135th (in 2022) to 127th** out of 146 countries in the report's 2023 edition, indicating an improvement in its ranking.
    - **India's neighbours Pakistan ranked at 142,** Bangladesh at 59, China at 107, Nepal at 116, Sri Lanka at 115 and Bhutan at 103.
  - The country has improved by **1.4 percentage points and eight positions** since the last edition, marking a partial **recovery towards its 2020 parity level.**
    - India had closed 64.3% of the overall gender gap.
- **Gender Parity in Education:**
  - India has achieved **parity in enrolment across all levels** of education, reflecting a positive development in the country's education system.
- **Economic Participation and Opportunity:**
  - India's progress in economic participation and opportunity remains a challenge, **with only 36.7% gender parity achieved** in this domain.
  - While there has been an uptick in parity in wages and income, there is a **slight drop in the representation of women** in senior positions and technical roles.
- **Political Empowerment:**
  - India has made strides in political empowerment, **achieving 25.3% parity** in this domain. Women represent **15.1% of parliamentarians,** which is the highest representation **since the inaugural report in 2006.**
  - 18 countries — including Bolivia (50.4%), India (44.4%) and France (42.3%) — have achieved **women's representation of over 40%** in **Local Governance.**
- **Health and Survival:**
  - There is a 1.9%-point improvement in India's sex ratio at birth, **after more than a decade of slow progress.**
  - However, India, along with Vietnam, China, and Azerbaijan, still **has relatively low scores on the Health and Surviva**l sub-index due to skewed sex ratios.

What are the Indian Initiatives to reduce Gender Gap in Social, Economic and Political Life?

- **Economic Participation and Health and Survival:**
  - **Beti Bachao Beti Padhao:** It ensures the protection, survival and education of the girl child.
  - **Mahila Shakti Kendra:** Aims to empower rural women with opportunities for skill development and employment.
  - **Mahila Police Volunteers:** It envisages engagement of Mahila Police Volunteers in States/UTs who act as a link between police and community and facilitates women in distress.
  - **Rashtriya Mahila Kosh:** It is an apex micro-finance organization that provides micro-

credit at concessional terms to poor women for various livelihood and income generating activities.
- Sukanya Samriddhi Yojna: Under this scheme girls have been economically empowered by opening their bank accounts.
- **Female Entrepreneurship:** To promote female entrepreneurship, the Government has initiated Programmes like Stand-Up India and Mahila e-Haat (online marketing platform to support women entrepreneurs/ SHGs/NGOs), Entrepreneurship and Skill Development Programme (ESSDP).
- **Kasturba Gandhi Balika Vidyalaya:** They have been opened in Educationally Backward Blocks (EBBs).
- **Political Reservation:** Government has reserved **33% of the seats in Panchayati Raj Institutions for women.**
  - **Capacity Building of Elected Women Representatives:** It is conducted with a view to empowering women to participate effectively in the governance processes.

Source: TH

Anxiety Disorders

For Prelims: Anxiety, Anxiety disorders, **Mental Health**

For Mains: Mental Health in India, De-Stigmatizing Mental Health.

Why in News?

Recently, there has been a growing recognition of the **impact of anxiety disorders** on individuals' **daily lives and overall well-being.** These common mental health conditions affect a significant portion of the population and can lead to persistent distress and impairment.

- Anxiety is a normal emotion that **can become problematic** when it becomes **persistent and disruptive.** In such cases, it may **indicate an anxiety disorder** that requires attention and appropriate treatment.

What is Anxiety disorder?

- **About:**
  - Anxiety disorders are a **group of** [mental health] **conditions** that involve **excessive and irrational fear and worry** about various aspects of life.
  - Anxiety disorders can affect anyone, regardless of age, gender, culture, or background.
- **Historical Context of Anxiety Disorders:**
  - Anxiety disorders were historically **classified within mood disorders** until the late 19th century. **Sigmund Freud** introduced the concept of "**anxiety neurosis**" to differentiate anxiety symptoms from depression.
  - Freud's original anxiety neurosis included people with phobias and panic attacks.
    - Anxiety neurosis is further categorized into **anxiety neurosis** (people with mainly psychological symptoms of anxiety) **and anxiety hysteria** (people with phobias and physical symptoms of anxiety).
- **Prevalence:**
  - According to India's **National Mental Health Survey,** neurosis and stress-related disorders have a **prevalence of 3.5% in India.**
    - These disorders are more commonly observed in women and are often overlooked or misdiagnosed in primary care settings. Childhood, adolescence, and early adulthood are considered high-risk periods for the onset of anxiety disorders.
- **Clinical Features of Common Anxiety Disorders:**
  - **Generalized Anxiety Disorder (GAD):**
    - **Excessive worrying** lasting over six months, not restricted to specific circumstances, and often accompanied by physical symptoms and distress.
  - **Panic Disorder:**
    - Recurrent, unexpected panic attacks characterized by intense physical symptoms and fear of catastrophic outcomes.
  - **Social Anxiety Disorder:**
    - Intense fear of **negative evaluation by others,** resulting in avoidance of social situations and significant distress.
  - **Separation Anxiety Disorder:**
    - Fear and distress concerning **separation from attachment figures,** accompanied by excessive worry about potential harm.
  - **Specific Phobias:**
    - **Irrational fear of specific objects, animals, or situations.**
- **Causes For Anxiety Disorders:**
  - **Genetics:**
    - An increased likelihood of anxiety disorders can be observed in individuals with a **family history of anxiety,** suggesting a genetic predisposition.
  - **Brain Chemistry:**
    - **Imbalances in neurotransmitters,** which are responsible for regulating mood and emotions, may play a role in the development of anxiety disorders.
  - **Personality Traits:**
    - Certain personality traits, such as being **shy, perfectionistic, or prone to stress**, can make individuals more susceptible to developing an anxiety disorder.
  - **Life Events:**
    - **Traumatic or stressful experiences, such as abuse, violence, loss, or illness,** can trigger or exacerbate anxiety disorders. Conversely, even positive life events like marriage, having a baby, or starting a new job can induce anxiety in some individuals.
  - **Medical Conditions:**
    - Underlying **physical health issues**, including diabetes, heart disease, thyroid problems, or hormonal imbalances, can contribute to the onset or manifestation of anxiety symptoms.
- **Treating Anxiety Disorders:**
  - Treatment decisions are based on the severity, persistence, and impact of symptoms, as well as patient preferences.
  - **Evidence-based interventions** include selective **serotonin reuptake inhibitors (SSRIs) and cognitive-behavioral therapy (CBT).**

- Co-occurring depression requires separate consideration and specific treatment.
- Treatment is usually continued for 9-12 months after symptom remission, gradually phased out as recommended.

What Initiatives has the Government of India taken to Address Mental Health?

- **National Mental Health Program (NMHP):** The **National Mental Health Program (NMHP)** was adopted by the government in **1982** in response to the large number of mental disorders and shortage of mental health professionals.
  - **District Mental Health Programme (DMHP), 1996** was also launched to provide community mental health services at the primary health care level.
- **Mental Health Act:** As part of the **Mental Health Care Act 2017**, every affected person has **access to mental healthcare and treatment from government institutions.**
  - It has significantly reduced the significance of Section 309 IPC **and attempts to commit suicide are punishable only as exceptions.**
- **Kiran Helpline:**
  - In 2020, the Ministry of Social Justice and Empowerment launched a **24/7 toll-free helpline** 'Kiran' to provide mental health support.
- **Manodarpan Initiative:**
  - It aimed at providing **psychosocial support** to students, teachers, and family members during the **Covid-19 pandemic.**
- **MANAS Mobile App:**
  - To **promote mental well-being across age groups**, the Government of India launched MANAS (Mental Health and Normalcy Augmentation System) **in 2021**.

UPSC Civil Services Examination Previous Year Question (PYQ)

Q. What does this quotation mean to you - "We can never obtain peace in the outer world until and unless we obtain peace within ourselves." – Dalai Lama **(2021)**

Source: TH

Airlines' Greenwashing and Contributing to Carbon Pollution

For Prelims: Greenwashing, **Airlines' Contribution to Carbon Pollution, Climate Change**, **GHG**, **Paris Agreement**, **SAF**.

For Mains: Concerns over Airlines' Greenwashing and Contributing to Carbon Pollution.

Why in News?

A lawsuit has been filed against **Delta Air Lines in the US**, accusing the company of engaging in **Greenwashing** by making false and misleading claims about its Sustainability Efforts and being a "Green" and carbon-neutral airline.

- The airline claimed to be carbon neutral from March 2020 and offered to offset the carbon emissions from customers' flights.

- However, media reports and investigations have highlighted **loopholes and inaccuracies in Delta's carbon offsetting process.**

What is Greenwashing?

- The term greenwashing was first used in **1986 by Jay Westerveld, an American environmentalist** and researcher.
- Greenwashing is the practice in which **firms and governments mark all kinds of activities as climate-friendly**, as something that would lead to emissions reduction, or avoidance of emissions.
    - Many of these claims are **unverifiable, misleading**, or dubious.
    - While it helps in boosting the image of the entity, they do nothing in the fight against **climate change**.
    - Several multinational corporations, including oil giants like Shell and BP, and Coca Cola have faced accusations of greenwashing.
- Greenwashing is prevalent across a **whole range of environmental activities.**
    - Developed countries are **often accused of greenwashing** their normal business investments in developing countries by highlighting climate co-benefits of the financial flows, sometimes with very little justification.
- Greenwashing is **considered an unfair trade practice under the Consumer Protection Act, 2019** in India, which prohibits misleading claims, but implementation of these regulations remains a challenge.

What are the Concerns Related to Airlines in Carbon Pollution?

- **Major Airlines Indulge in Greenwashing:**
    - Investigations and **studies** in (**Guardian investigation and Greenpeace report**) have revealed **flaws and deceptiveness in the carbon offset systems of major airlines,** casting doubt on the industry's carbon neutrality assertions.
        - Other airlines, including KLM (Netherlands-based airline) and Ryanair (Europe), Air Canada and Swiss Airlines have faced similar allegations of greenwashing and misleading customers with claims of being environmentally friendly.
    - These findings raise concerns about the **credibility of the International Air Transport Association's net zero pledge by 2050,** which experts criticized as an act of greenwashing.
- **Airlines Significant Contributors to Carbon Pollution:**
    - Flying is a significant contributor to carbon pollution, in 2021 aviation accounted for over **2% of global energy-related CO_2 emissions according to** International Energy Agency (IEA)**.**
    - Aviation emissions could grow by **300-700% by 2050,** per estimates.
        - A single round trip from Mumbai to L.A. generates **4.8 tonnes of CO2 (equivalent to charging 6,00,000 smartphones).**
- **Blind Spots in Offset System**:
    - There is a **lack of universally recognized standards** and tracking mechanisms for counting carbon offsets, making it difficult to ensure additionality—the reduction of emissions that would not have occurred otherwise.
    - Certification organizations play a role in connecting buyers and sellers of carbon credits, but the **oversight and verification processes have been criticized for allowing misleading projects** and phantom credits.

What are Carbon Credits?

- Carbon Credits (Carbon offsets) are received by the companies when they invest in offset projects such as environmental conservation, energy efficiency or renewable energy which **reduce, avoid, or remove greenhouse gas emissions from the atmosphere.**
- These credits represent the **amount of carbon dioxide that would have been removed from the atmosphere** through these initiatives.
- Each credit is equivalent to **one metric ton of CO_2**, which contributes to global warming.

- Companies use these credits to offset their carbon emissions in one area, like airplane travel, by claiming that they are reducing emissions somewhere else, such as in distant rainforests.
    - The voluntary carbon-offset market is expected **to grow significantly, from USD 2 billion** in 2020 to approximately USD 250 billion by 2050, according to a report by Morgan Stanley in 2023.

How does Greenwashing Affect Carbon Credits?

- **Informal Markets:**
    - There are credits available for all kinds of activities such as for growing trees, for planting a certain kind of crop, for installing **energy-efficient equipment in office buildings.**
        - The credits for such activities are often certified by **unofficial third-party companies** and sold to others.
        - Such transactions have been flagged for **lack of integrity and double counting.**
- **Credibility:**
    - Countries like India or Brazil had accumulated **huge carbon credits under the [Kyoto Protocol](#)** and wanted these to be transitioned to the new market being set up under the **[Paris Agreement.](#)**
        - But many developed countries resisted this, questioning the integrity of the credits and claiming they did not **accurately represent reductions in emissions.**
- **Lead to Lack of Transparency:**
    - Greenwashing can lead to a l**ack of transparency in the carbon offset market.**
    - Companies may provide **limited information about the projects** they support, making it difficult to verify their **claims and assess** the actual environmental impact.
    - This lack of transparency **undermines the credibility and trustworthiness** of the carbon credit system.
- **Diversion from Real Emission Reductions:**
    - Greenwashing practices may divert attention and resources away from genuine efforts to reduce carbon emissions.
    - Companies may rely on carbon credits as a way to offset their emissions without making significant changes to their operations or adopting more sustainable practices.
    - This can impede progress toward meaningful emission reductions and the transition to a low-carbon economy.

Way Forward

- The complex nature of carbon **offsetting and the lack of consensus on effective standards** present challenges in implementing and enforcing regulations. Therefore, there is a need for better regulation, transparency, and understanding of carbon offset programs.
- The focus should shift **towards decarbonizing commercial aviation** through **[Sustainable Aviation Fuel (SAF)](#)**, hydrogen, and full-electric propulsion techniques, despite the obstacles faced by these alternatives.
- As the push for environmental sustainability grows, there is a need for better regulation, scrutiny, and development of **more impactful strategies to reduce aviation's carbon footprint.**

UPSC Civil Services Examination Previous Year Question (PYQ)

Q. Regarding "carbon credits", which one of the following statements is not correct? (2011)

(a) The carbon credit system was ratified in conjunction with the Kyoto Protocol
(b) Carbon credits are awarded to countries or groups that have reduced greenhouse gases below their emission quota
(c) The goal of the carbon credit system is to limit the increase of carbon dioxide emission
(d) Carbon credits are traded at a price fixed from time to time by the United Nations Environment Programme.

Ans: (d)

Adoption in India

For Prelims: Adoption in India, **Central Adoption Resource Authority**, **Hindu Adoption and Maintenance Act, 1956**, **Juvenile Justice (Care and Protection of Children) Amendment Act, 2021**

For Mains: Laws Related to Adoption in India, Major Challenges Related to Adoption in India.

Why in News?

The **Ministry of Women and Child Development** has recently highlighted the significant **backlog of adoption cases in Maharashtra,** with the highest number of pending adoption cases in India (329 awaiting resolutions).

- In January 2023, the **Bombay HC directed the state government not to transfer pending adoption proceedings to District Magistrates,** (as mandated under the Juvenile Justice (Care and Protection of Children) Amendment Act, 2021), leading to confusion and hindering progress.

What is the Status of Child Adoption in India?

- **About:**
  - It is a **legal and emotional process** that involves **accepting the responsibility of caring for a child** who is not biologically related to the adoptive parents.
  - The process of adoption in India is monitored and regulated by the **Central Adoption Resource Authority (CARA),** which is part of the Ministry of Women and Child Care.
    - **CARA is the nodal body for adoption of Indian children and is mandated to monitor and regulate in-country adoptions.**
    - CARA is also designated as the **Central Authority to deal with inter-country adoptions** in accordance with the provisions of the **Hague Convention on Intercountry Adoption, 1993,** ratified by Government of India in 2003.
- **Laws Related to Adoption in India:**
  - Adoptions in India are governed by two laws: **the** Hindu Adoption and Maintenance Act, 1956 **(HAMA)** and **the Juvenile Justice Act, 2015.**
    - Both laws have their separate eligibility criteria for adoptive parents.
  - Those applying under the **JJ Act have to register on CARA's portal after which a specialised adoption agency carries out a home study report.**
    - After it finds the candidate eligible for adoption, a child declared legally free for adoption is referred to the applicant.
  - Under HAMA, **a "dattaka hom" ceremony or an adoption deed or a court order is sufficient to obtain irrevocable adoption rights.**
    - **Hindus, Buddhists, Jains, and Sikhs are legalized to adopt kids under this Act.**
- **Recent Development:**
  - The Parliament passed the **Juvenile Justice (Care and Protection of Children) Amendment Act, 2021** in order to amend the Juvenile Justice Act (JJ Act), 2015.
    - The key changes include authorising **District Magistrates** and Additional

District Magistrates to issue adoption orders under Section 61 of the JJ Act.
- Earlier in JJ Act 2015, adoption of a child is final on the issuance of an adoption order by the civil court.
  - The Ministry of Women and Child Development has introduced the **Adoption Regulations-2022**, which has streamlined the adoption process.
    - **District Magistrates (DMs) and Child Welfare Committees** have been directed to upload adoption orders and case status in real time.
    - Since the implementation of the Adoption Regulations-2022, 2,297 adoption orders have been issued by DMs nationwide, resolving a significant portion of pending cases.

What are the Major Challenges Related to Adoption in India?

- **Lengthy and Complex Adoption Process:** The adoption process in India can be lengthy, bureaucratic, and complex, leading to delays in the placement of children with suitable families.
  - India's tedious and interminable adoption process can clearly be seen in the statistics with the CARA which states that **while more than 30,000 prospective parents are currently waiting to adopt, less than 7% the number of children — 2131— are legally free for adoption.**
  - Around two-third of them are children with special needs, and **it takes three years for an adoption process to complete.**
- **Illegal and Unregulated Practices:** Unfortunately, there are instances of illegal and unregulated adoption practices in India. This includes **baby trafficking, child-selling, and the existence of unregistered adoption agencies,** which exploit vulnerable children and biological parents.
  - In 2018, **Ranchi's Mother Teresa's Missionaries of Charity** came under fire for its **"baby-selling racket"** after a nun from the shelter confessed to selling four children.
- **Returning Children after Adoption: India also faces an unusual upsurge in adoptive parents** returning children after adopting.
  - In 2020, CARA stated that over 1,100 children adopted across the country have been **returned to child care institutions by their adoptive parents in the last five years.**

Way Forward

- **Strengthening Adoption Laws:** There is a need to review and update adoption laws to streamline the process, make it more transparent, and ensure the best interests of the child.
  - This includes **simplifying paperwork, reducing delays, and addressing any loopholes or ambiguities in the existing legislation.**
- **Post-Adoption Services:** There is a need to establish comprehensive post-adoption support services to assist both adoptive parents and adopted children.
  - This can include **counselling, educational support, access to healthcare, and guidance** for managing any challenges that arise during the adoption journey.
- **Awareness and Education:** There is a need to **promote awareness about adoption as a viable option for building families.**
  - It includes **educating the public about the benefits, procedures, and legal aspects of adoption**. Also, encouraging positive attitudes towards adoption and dispel misconceptions or stigma associated with it.

Source: IE

Manipulating Phonons for Quantum Computing

Why in News?

In a recent study, researchers from IBM have developed an **Acoustic Beam-Splitter** to manipulate **Phonons** to be used for **Quantum Computing**, potentially solving complex problems beyond the reach of conventional Computers.

- Beam-splitters, commonly used in **optics research, split a beam of light into two parts**. The working of a beam-splitter draws on quantum physics.

What are Phonons?

- Phonons are packets of vibrational energy and can be **considered as the quantum equivalent of sound.**
- Similar to **photons, which are packets of light energy,** phonons can potentially serve as units of information in quantum computing (qubits).
    - Researchers are investigating ways **to manipulate and control phonons for quantum computing purposes.**
    - The challenge lies in identifying methods to manipulate phonons analogous to the manipulation of electrons or photons.

What is Acoustic Beam-Splitter?

- It is a small device shaped like a **comb with metal bars.** It was placed in a short channel made of lithium niobate.
- At each end of the channel, there was a **superconducting qubit that could emit** and detect individual Phonons.
- The whole setup was kept at very low temperatures. The phonons represented the collective **vibration of billions of atoms and behaved similarly** to how photons interact with an optical beam-splitter.
- When a phonon was emitted from one side, it was **reflected half the time and transmitted to the other side** the other half.
- If photons were emitted from both sides at the same time, they **all ended up on one side.**
- The data confirmed that **such two-phonon interference occurred, which** shows phonons act **just as quantum as photons.**

What is Quantum Computing?

- **About**:
    - Quantum computing is a **rapidly emerging technology that harnesses** the laws of quantum mechanics to solve problems too complex for classical computers.
        - Quantum mechanics is a **subfield of physics that describes the behavior of particles** — atoms, electrons, photons, and almost everything in the molecular and sub molecular realm.
    - It is an exciting new technology that will **shape our world tomorrow by providing us with an edge** and a myriad of possibilities.
    - It is a fundamentally different way of processing information compared to today's classical computing systems.
- **Features:**
    - While today's classical computers store information as binary 0 and 1 states, quantum computers draw on the fundamental laws of nature to **carry out calculations using quantum bits (Qubits).**
    - Unlike a bit that has to be a 0 or a 1, a qubit can be in a **combination of states, which allows for exponentially larger calculations** and gives them the potential to solve complex problems which even the most powerful classical supercomputers are not capable of.
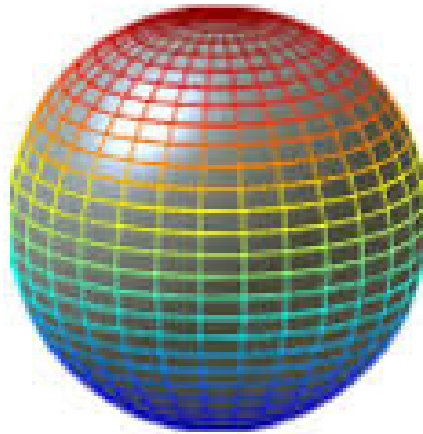
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- **Significance:**
    - Quantum computers can tap into the quantum mechanical phenomenon to manipulate information and are **expected to shed light on processes of molecular and chemical interactions**, address difficult optimization problems, and boost the power of artificial intelligence.
    - These could open the door to new scientific discoveries, **life-saving drugs, and improvements in supply chains**, logistics and the modelling of financial data.

UPSC Civil Services Examination Previous Year Question (PYQ)

Prelims

Q. Which one of the following is the context in which the term "qubit" is mentioned?

(a) Cloud Services
(b) Quantum Computing
(c) Visible Light Communication Technologies
(d) Wireless Communication Technologies

Ans: (b)

Source: TH

Mesolithic Rock Paintings Unearthed in Andhra Pradesh

Why in News?

Recently, a former archaeologist of **Archaeological Survey of India (ASI)** has discovered a **Mesolithic period** rock painting depicting a person tilling a piece of land in Guntur district, Andhra Pradesh.

- It was found while surveying the **lower** River Krishna **Valley** to ascertain the architectural features of shrines.
- Earlier, in 2018, archaeologists had uncovered prehistoric rock art estimated to be from the **Neolothic era, circa 1500-2000 BC,** on natural limestone formations near Dachepalli in Guntur district.

What are the Key Findings?

- **Natural Rock Shelters:**
    - The rock paintings were found **on the walls and ceilings of naturally formed caves** on a hillock in Orvakallu.
    - These caves served as **shelters for the prehistoric humans** who inhabited the area during that time.
- **Mesolithic Rock Paintings:**
    - Among the five caves explored, two stood out with **distinguished depictions of rock paintings.**
    - Executed by people of the Mesolithic Age, these paintings offer a **glimpse into the artistic abilities** and practices of that era.
- **Artistic Materials:**
    - The rock paintings were created **using natural white kaolin and red ochre pigments.**
        - **Ochre** is a **pigment composed of clay**, sand, and ferric oxide.
        - **Kaolinite** is a **soft, earthy, and usually white mineral** produced by the chemical weathering of aluminium silicate minerals like feldspar.
    - Over time, exposure to air and wind has **resulted in significant damage** to the paintings. However, some **sketches and outlines remain intact.**
- **Depicted Scenes:**
    - The rock paintings depict various scenes from the daily life of the **prehistoric communities.**

- One painting portrays a man skillfully **catching a wild goat with his left hand while using a hook-like** implement to control it.
- Another painting captures two couples with raised hands, while a child stands behind them, **possibly indicating communal activities** or rituals.
  - **Agricultural Practices:**
    - A significant painting showcases a **man holding a plough and appearing to till the land.** This depiction suggests a semi-settled life pattern where community members engaged in domesticating animals and cultivating crops, reflecting early agricultural practices.

Stone Ages

- **Palaeolithic (Old Stone) Age:**
  - Basically, a hunting and food gathering culture.
  - Palaeolithic tools include **sharpened stone, chopper, hand axe, scraper, spear,** bow and arrow, etc. and were generally made up of hard rock quartzite.
  - Rock paintings and **carvings found at Bhimbetka, Madhya Pradesh** reflect upon hunting as the main subsistence activity.
  - Palaeolithic age in India is divided **into three phases**:
    - **Early or Lower Palaeolithic** (500,000 – 100,000 BC)
    - **Middle Palaeolithic** (100,000 – 40,000 BC)
    - **Upper Palaeolithic** (40,000 – 10,000 BC).
- **Mesolithic (Middle Stone) Age (10,000 BCE - 8000 BCE):**
  - The age is marked by transition from **Pleistocene period to Holocene period** and favorable changes in the climate.
  - The early period of Mesolithic age marks the **hunting, fishing and food gathering.**
  - Domestication of the animals **began** in this age.
  - The tools called **Microliths were smaller** and had **improved geometry** than the Palaeolithic age.
- **Neolithic (New Stone) Age (8000 BCE - 1000 BCE):**
  - Referred to as the **concluding phase of the Stone Age,** the age heralded the beginning of food production.
  - Sedentism (living in one place for a long time), use of pottery, and invention of crafts are characteristic features of the neolithic age.
  - The neolithic tools were **composed of heavy ground tools like pestles,** grinders, pounders and also axes and sickles.
- **Megalithic Culture:**
  - Megaliths refer to **large stone structures that were constructed** either as burial sites or as commemorative sites.
  - In India, archaeologists trace the majority of the megaliths to the **Iron Age (1500 BC to 500 BC),** though some sites precede the Iron Age, extending up to 2000 BC.
  - Megaliths are spread across the Indian subcontinent. Majority of them are found in peninsular India, concentrated in the states of Maharashtra (mainly in Vidarbha), Karnataka, Tamil Nadu, Kerala, Andhra Pradesh and Telangana.

Source: TH

Unprecedented Rise in Jeera Prices

Why in News?

Over the past few months, **Jeera (Cumin)** prices have experienced an unprecedented surge.

- The primary reason for the price surge is the **significant imbalance between the supply of jeera and its demand.** The arrivals of jeera in the market have been considerably **lower than the demand,** leading to a scarcity of the spice.

What are the Key points Related to Jeera?

- **About:**
  - Jeera is an **aromatic seed that enhances** the flavor of Indian dishes. It is one of the important **spices & condiments, widely used** for culinary as well as medicinal purposes.
    - Jeera is reported to have originated from the Mediterranean to India. Cumin was known to the Egyptians 5,000 years ago and it was found in the pyramids.
- **Importance:**
  - The economically important part of the plant is the dried fruit. It is used as a **condiment in various cuisines of different cultures** either as whole or in powdered form.
  - Cumin oil is reported to have **antibacterial activity.** It is used in veterinary medicines and various other industries.

- **Climate and Cultivation:**
  - Jeera grows well in both **tropical and sub-tropical climate** and it comes up well in all types of soils, but well drained sandy loam soils are best suited.
  - Jeera cultivation is highly **sensitive to weather conditions**. It requires a moderately **cool and dry climate** without humidity, which limits cultivation to **specific regions in Gujarat and Rajasthan.**
    - Unjha, situated in the heart of **India's jeera cultivation belt in Gujarat,** has emerged as the primary market setting the prices for the crop.
    - Gujarat is the largest producer of jeera in the country.
  - It is **Rabi Crop**, sown in October to November and **harvested in February and March.**
- **Major Producers:**
  - India dominates global jeera production, accounting for **approximately 70% of the world's output.**
  - Other countries such as **Syria, Turkey, UAE, and Iran** make up the remaining 30%.
    - Production disruptions caused by civil war and natural disasters in these countries have further highlighted **India's significance as a major producer.**

Source: IE

Rapid Fire Current Affairs

Estonia Legalizes Same-Sex Marriage

Estonia's parliament **approved a law to legalize [same-sex marriage](), becoming the first central European country to do so.** This move sets Estonia apart from its neighbors in the region, **where same-sex marriage remains illegal.**

Marriage between same-sex couples is legally performed and recognised in 34 other countries. Of these 34, **23 legalised same sex couples to marry through legislation, while 10 through court decisions**. Netherlands was the **first ever nation to legalise same-sex marriage in the year 2001.**

The **Indian legal system currently does not recognize same-sex marriages**, and the country's laws define marriage as a union between a man and a woman. However, in November 2018, the **Supreme Court decriminalised homosexuality by striking off parts** of [**Section 377 of the Indian Penal Code (IPC)**]().

Read more: [Same-sex marriage]()

Integrated Simulator Complex 'Dhruv'

Recently, India's Defense Minister, inaugurated the **Integrated Simulator Complex (ISC) 'Dhruv' at the [Southern Naval Command]() in Kochi.** This cutting-edge facility is equipped with **state-of-the-art simulators developed indigenously** and is set to revolutionise practical training in the Indian Navy.

The simulators housed within the ISC 'Dhruv' will provide **real-time experiences in navigation, fleet operations, and naval tactics, greatly enhancing the training process**. Notably, these simulators will **also be utilised to train personnel from friendly countries, strengthening defence cooperation.**

Among the simulators showcased, the **Multi-Station Handling Simulator (MSSHS), Air Direction and Helicopter Control Simulator (ADHCS), and Astronavigation Dome** garnered attention. The [**ship handling**]() simulators, exported to 18 countries, highlight India's prowess in simulator manufacturing, while the Astronavigation Dome, a first-of-its-kind in the Indian Navy, showcases the nation's innovative capabilities.
Read more: [Indian Navy]()

US Senate Proposes 'NATO Plus Five' Defence Status for India

Recently, in a significant move coinciding with Prime Minister of India's visit to Washington, the **co-chairs of the U.S. Senate** announced their plan to introduce legislation granting India **'NATO plus five'** defence status. This arrangement currently includes the US, its NATO partners, and **five countries: Australia, New Zealand, South Korea, Japan, and Israel**. Aims to enhance defence ties and **facilitate the transfer of defence equipment.** However, India's External Affairs Minister, S. Jaishankar, had already rejected this framework, stating that it did not apply to India. US defended the proposal, emphasizing the importance of increasing defence trade between the US and India to **bolster India's defence capabilities,** particularly in the face of the **China threat.** The goal is to establish a comprehensive partnership between the two nations.

Read more: [North Atlantic Treaty Organization (NATO)]()

St. Petersburg International Economic Forum (SPIEF)

The **26ᵗʰ edition of the [St. Petersburg International Economic Forum (SPIEF)]()** showcased Russia's determination to maintain its **economy despite Western sanctions.** The [**war in Ukraine**]() has **prompted Russia to seek alternative economic and geopolitical alliances.** This year's SPIEF was less international due to the absence of high-ranking delegates and CEOs from the West.

SPIEF is an **annual Russian business event** for the economic sector, which has been held in **St.**

Petersburg since 1997, and under the Russian President since 2006. The Forum brings together the **leaders of major Russian and international companies,** heads of state, political leaders, experts, and civil society representatives to **discuss key issues on the global economic agenda** and to **exchange best practices** and expertise for **sustainable development.** The Forum also hosts an exhibition of investment and business projects and initiatives from various regions and sectors of Russia and other countries.