9th Oct, 2024

1. PSLV- C37 upper stage re-enters Earth orbit
GS 3 (Science and Tech)

- **Why in News:** ISRO announced the successful re-entry of the Polar Satellite Launch Vehicle-C37 (PSLV-C37) upper stage into Earth's atmosphere on October 6. This achievement aligns with global efforts to reduce space debris, supporting ISRO's goal of achieving debris-free space missions by 2030.

Upper stage of rocket returns to earth after 7 years: ISRO

The Hindu Bureau
BENGALURU

The Indian Space Research Organisation (ISRO) on Tuesday said that the upper stage of the Polar Satellite Launch Vehicle C-37 (PSLV C-37 mission) re-entered the earth's atmosphere on October 6.

The PSLV-C37 mission was launched from Sriharikota on February 15, 2017, with Cartosat-2D as the main payload, and another 103 satellites as co-passengers.

The space agency created history as it was the first mission to launch 104 satellites with a single vehicle.

FULL REPORT ON » PAGE 5

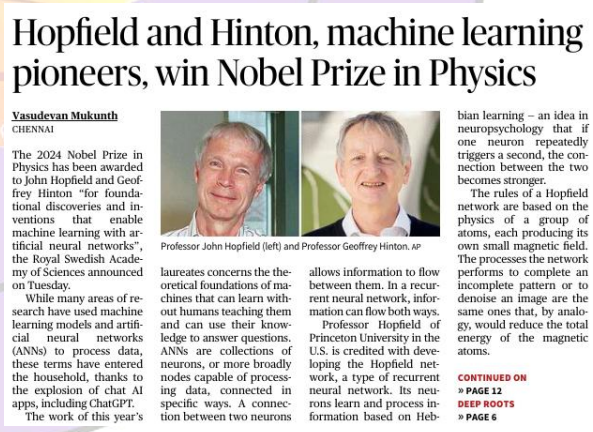
- **Space Debris**
  - **About**
    - Space debris refers to defunct, human-made objects in Earth's orbit, such as non-functional satellites, spent rocket stages, and fragments from satellite collisions.
    - These debris pose a growing threat to operational spacecraft, satellites, and the International Space Station (ISS).
  - **Challenges**
    - **Collisions:** Even tiny debris can cause severe damage to satellites and space stations due to their high velocities.
    - **Chain Reaction (Kessler Syndrome)**: Increasing debris can lead to more collisions, creating even more debris and increasing the risk of cascading damage.
    - **Cost of Mitigation**: Tracking and removing debris require advanced technology and substantial financial investment.
  - **Increasing space debris**
    - With the rise in the number of satellites in orbit around the earth, space debris has become a pressing issue.
    - According to ISRO's Space Situational Assessment report 2022, the world placed 2,533 objects in space in 179 launches in 2022.
    - The number of space objects greater than 10 cm in size in LEO is expected to be about 60,000 by 2030.
  - **Legal provisions**
    - Currently, there are no international space laws pertaining to LEO debris.
    - However, most space-exploring nations abide by the **Space Debris Mitigation Guidelines 2002** specified by the IADC. This was endorsed by the U.N. in 2007.
    - The guidelines outline methods to limit accidental collisions in orbit, break-ups during operations, intentional destruction, and post-mission break-ups.
  - **International Institutions**
    - **Inter-Agency Space Debris Coordination Committee (IADC)**: A global forum that coordinates efforts to mitigate space debris.
    - **United Nations Committee on the Peaceful Uses of Outer Space (COPUOS)**: Sets space debris mitigation guidelines.
    - **International Telecommunication Union (ITU):** Regulates satellite orbital slots to prevent overcrowding.
  - **Steps taken by India**
    - **Debris Free Space Mission (DFSM):** ISRO is committed to achieving a debris-free space environment by 2030 through passivation, active de-orbiting, and controlled re-entry of spent rocket stages.
      - The implementation of this DFSM initiative will start by the beginning of 2025.

- This includes selecting clean orbits, budgeting fuel for post-mission disposal, and precisely controlling re-entry trajectories.
- **ISRO's Debris Mitigation Strategy:** India's space agency, ISRO, follows international guidelines, including the IADC's recommendation to limit post-mission orbital life to 25 years.
- **IS4OM (ISRO System for Safe and Sustainable Space Operations Management):** Monitors space debris and orbital decay, ensuring compliance with mitigation guidelines.

- **PSLV- C37 upper stage re-enters Earth orbit**
  - **Re-entry of PSLV- C37 upper stage**
    - On October 6, 2024, the upper stage of ISRO's PSLV-C37 mission, launched in February 2017, re-entered Earth's atmosphere.
    - The PSLV-C37 carried 104 satellites, including Cartosat-2D as the primary payload.
    - After the mission, the upper stage (PS4) remained in orbit at approximately 470x494 km.
    - Over time, its orbit decayed due to atmospheric drag and was closely monitored by ISRO and US Space Command (USSPACECOM).
  - **Re-entry followed international debris mitigation guidelines**
    - This re-entry followed international debris mitigation guidelines, specifically the IADC recommendation to limit the post-mission orbital life to 25 years.
    - ISRO's passivation sequence successfully lowered PS4's orbit, **ensuring re-entry within eight years.**
    - ISRO is now working to further reduce the orbital lifetime of rocket stages to five years through active de-orbiting, with future missions focusing on controlled re-entry.
    - ISRO also aims to achieve a Debris Free Space Mission (DFSM) by 2030.

2. Nobel Prize in Physics Honors Pioneering Advances in AI and Machine Learning
GS 3 (Science and Tech)

- **Why in News:**
  - The 2024 Nobel Prize in Physics was awarded to **John Hopfield and Geoffrey Hinton** for their foundational contributions to AI, particularly in machine learning and artificial neural networks.
  - Their ground-breaking research in the 1980s laid the foundation for the AI revolution unfolding today



Hopfield and Hinton, machine learning pioneers, win Nobel Prize in Physics

Vasudevan Mukunth
CHENNAI

The 2024 Nobel Prize in Physics has been awarded to John Hopfield and Geoffrey Hinton "for foundational discoveries and inventions that enable machine learning with artificial neural networks", the Royal Swedish Academy of Sciences announced on Tuesday.

While many areas of research have used machine learning models and artificial neural networks (ANNs) to process data, these terms have entered the household, thanks to the explosion of chat AI apps, including ChatGPT.

The work of this year's laureates concerns the theoretical foundations of machines that can learn without humans teaching them and can use their knowledge to answer questions. ANNs are collections of neurons, or more broadly nodes capable of processing data, connected in specific ways. A connection between two neurons allows information to flow between them. In a recurrent neural network, information can flow both ways.

Professor Hopfield of Princeton University in the U.S. is credited with developing the Hopfield network, a type of recurrent neural network. Its neurons learn and process information based on Hebbian learning – an idea in neuropsychology that if one neuron repeatedly triggers a second, the connection between the two becomes stronger.

The rules of a Hopfield network are based on the physics of a group of atoms, each producing its own small magnetic field. The processes the network performs to complete an incomplete pattern or to denoise an image are the same ones that, by analogy, would reduce the total energy of the magnetic atoms.

Professor John Hopfield (left) and Professor Geoffrey Hinton. AP

CONTINUED ON
» PAGE 12
DEEP ROOTS
» PAGE 6

- **Machine learning (ML)**
  - **About**
    - ML is a subset of artificial intelligence (AI) that enables computers to learn from and make decisions based on data without being explicitly programmed for each task.
    - In machine learning, algorithms identify patterns in large datasets and use these patterns to make predictions or perform specific tasks.
    - The key idea is that systems improve their performance over time through experience, by training on data.
  - **Applications of Machine Learning:**
    - Image and speech recognition
    - Recommendation systems (like those used by streaming services)
    - Fraud detection
    - Healthcare diagnostics
    - Autonomous vehicles

- **Deep Learning (DL)**
  - **About**
    - Deep Learning is a specialized subset of machine learning that focuses on using artificial neural networks with multiple layers (hence "deep").
    - It mimics the structure and function of the human brain to recognize complex patterns in large datasets, such as images, text, or sound.
    - Deep learning has been pivotal in advancing AI technologies, particularly in areas like image recognition, natural language processing, and self-driving cars.
  - **Key Applications of Deep Learning:**
    - **Image and speech recognition** (e.g., face detection, virtual assistants)
    - **Autonomous vehicles** (e.g., self-driving cars)
    - **Natural language processing** (e.g., language translation)
    - **Medical diagnostics** (e.g., cancer detection in medical imaging)
  - **ML Vs. DL**
    - While **machine learning** involves training algorithms with structured data and often requires human input for feature extraction, **deep learning** automates feature discovery using multi-layered neural networks, making it more powerful for complex tasks, especially when large datasets are available.
- **Artificial Neural Network (ANN)**
  - **About**
    - ANN is a mathematical model that uses a network of interconnected nodes to mimic the human brain's neurons and process data.
    - ANNs are a type of machine learning (ML) and deep learning that can learn from mistakes and improve over time.
    - They are used in artificial intelligence (AI) to solve complex problems, such as recognizing faces or summarizing documents.
  - **Key features of ANNs**
    - **Structure**
      - ANNs are made up of layers of nodes, each containing an activation function. The nodes are interconnected, with each node in a layer connected to many nodes in the previous and next layers.
    - **Learning**
      - ANNs are adaptive and learn from their mistakes using a backpropagation algorithm.
      - They modify themselves as they learn, with inputs that contribute to the right answers weighted higher.
    - **Output**
      - The output of the ANN is produced by the final layer of nodes. The output is usually a numerical prediction about the information the ANN received.
  - **Applications of Artificial Neural Networks:**
    - Image and video recognition (e.g., facial recognition systems)
    - Speech recognition (e.g., virtual assistants like Siri and Alexa)
    - Natural language processing (e.g., language translation)
    - Medical diagnostics (e.g., detecting diseases from medical images)
    - Autonomous vehicles (e.g., self-driving car navigation)
  - In essence, artificial neural networks mimic the brain’s ability to learn from experience, adapt, and recognize complex patterns, making them foundational to modern AI and machine learning systems.
- **Works of Noble Prize winners**
  - **Hopfield's contribution - Mimicking the Brain with Neural Networks**
    - Hopfield's major breakthrough was creating artificial neural networks that mimic human brain functions like remembering and learning.
    - Hopfield's network processes information using the entire structure rather than individual bits, unlike traditional computing.

- It captures patterns holistically, such as an image or song, and recalls or regenerates them even from incomplete inputs.
- This breakthrough advanced pattern recognition in computers, paving the way for technologies like facial recognition and image enhancement.
- His research was inspired by earlier discoveries in neuroscience, notably Donald Hebb's work on learning and synapses in 1949.

- **Hinton's Contribution - Deep Learning and Advanced Neural Networks**
  - Hinton advanced Hopfield's work by developing deep neural networks capable of complex tasks like voice and image recognition.
  - His method of backpropagation enabled these networks to learn and improve over time through training with large datasets.
    - Backpropagation, short for "backward propagation of errors," is an algorithm for supervised learning of artificial neural networks using gradient descent.
  - His contributions led to major advancements in AI technologies, including modern applications such as speech recognition, self-driving cars, and virtual assistants.
  - Hinton's deep learning networks made a significant impact at the 2012 ImageNet Visual Recognition Challenge, where his team's algorithm dramatically improved image recognition technology.
  - His work demonstrated the vast potential of AI in various fields, including astronomy, where machine learning helps researchers analyze vast amounts of data.

- **Conclusion**
  - Both Hopfield and Hinton have made pioneering contributions to the development of AI, with Hopfield bridging neuroscience, physics, and biology, and Hinton revolutionizing computer science.
  - Their work has shaped modern AI technologies, making them deserving recipients of the Nobel Prize in Physics.

3. Halari donkey
GS 3 (Environment)

- **Why in News:** The endangered Halari donkeys, native to the Halar region of Gujarat, are considered to be intelligent animals which work closely with human beings.
- **About Halari donkey:**
  - It is native to the **Halar region of Gujarat** especially found in the semi-arid landscape of **Jamnagar and Dwarka**
  - **Appearance:** It is white in colour, and is larger and **more resilient** than other donkey breeds.
  - They are social animals and form close bonds with people, supporting them for transport needs.
  - **Uses**
    - The **Bharwad and Rabari pastoralists** are the main communities which use this donkey as a pack animal to carry luggage during migration with small ruminants.
    - The **Kumbhar** (potter) community also uses this animal for pottery work in Dwarka in the Jamnagar region.
    - Halari donkey milk is known for its sweetness. Milk powder made from it can fetch upwards of ₹7,000 a kg in the international market and is **used for cosmetic purposes.**
  - **Conservation status:** It is considered endangered; the surviving population of the Halari donkey numbers fewer than 500.

4. **Sunset for the U.K.'s Coal-Fired Power, Lessons for India**
GS 2 (International events of importance)

Sunset for the U.K.'s coal-fired power, lessons for India

Kunal Shankar

The shuttering of Britain's last coal-fired power plant, in Nottinghamshire, is a milestone and indicates the hastening of an ongoing paradigm shift in energy production globally. But this has by no means been a frictionless transition, as it has been portrayed in much of the press. There have also been calls to replicate the United Kingdom's coal phase-out globally. While Britain's experiment could hold good for a few developed economies, a far more tailor-made approach would be required for developing and least-developed nations.

Britain's coal phaseout must also not be viewed as beginning with its 2015 Paris pledge to bring down unabated coal-fired power to zero by 2025. It must largely begin with the disastrous Great Smog of London of 1952, leading to the enactment of environmental legislation such as the 1956 Clean Air Act and other protracted processes over a 70-year period, which included geo-political, environmental, economic and social pressures. The discovery of natural gas in the North Sea in 1965 and the desire to move away from coal imports from the Soviet Union at the height of the Cold War, as depleting domestic reserves made mining uneconomical, thereby jacking up costs of coal-fired energy production, collectively hastened the transition away from coal, which began almost 60 years ago. The subsequent forced closures of about 20 mines in the mid-1980s by the Margaret Thatcher government, despite a year-long miners' protest, led to blight and inter-generational poverty that some parts of the erstwhile coal-reliant regions of the U.K. continue to face. This is not to undermine the urgency with which nations must work toward drastically reducing their carbon emissions over the next two decades, but to appreciate and emphasise the vastly different trajectories and plans required to reach this goal.

Let us consider comparing India with the U.K.'s trajectory to achieving net zero emissions. At the 2021 Glasgow COP, India and China stood out seeking an amendment to the final declaration and having the phrase 'phasing down' and not 'phasing out' of coal introduced. India pledged to achieve net zero emissions by 2070 and meet half its energy needs from renewables by 2050.

Cumulative emissions

India is the third largest carbon emitter, behind the United States and China, emitting about 2.9 gigatons in 2023, far ahead of the U.K.'s 384 million metric tonnes in the same year. But India's population is over 20 times that of the U.K. Moreover, India's per capita emissions were at 2 tonnes in 2023, less than half the global average of 4.6 tonnes and almost a third of the U.K.'s 5.5 tonnes in the same year.

An analysis by Carbon Brief that considered historical emissions of nations between 1850 and 2024 (till the closure of the Nottinghamshire plant), took into account their carbon footprint as colonial powers. This put the U.K. at fourth place, with emissions touching 10.4 billion tonnes, which Carbon Brief said was 'more than most countries ever produced from all sources'.

Britain built the earliest known public coal-fired power plant in 1882 in the heart of London near Fleet Street. Coal became the mainstay in Britain, powering homes, industries and businesses for well over half a century until the mid 1960s. Coal employment peaked in 1920, employing 1.2 million miners at about 3,000 mines nationwide. About a 100 small coal-fired power plants dotted the landscape at this time, supplying power to nearby towns and industrial areas. And, Britain dominated coal exports in the early 20th century accounting for 30% of global exports in 1913. The U.K.'s peak thermal power consumption was in the 1950s and 1960s, when 90% of energy was generated by coal, before steadily shifting to natural gas, nuclear and, more recently, wind and solar.

India could learn from the U.K.'s transition, ensuring that it does not make the mistakes Britain made

India's coal story

India's first coal mine, the Raniganj coalfield, straddles present-day West Bengal and Jharkhand. While it was established as early as in 1774 by the British East India Company (and this is why historical CO_2 emissions matter), this led to large-scale coal extraction from much of India's eastern and central States of Jharkhand, West Bengal, Odisha, Chhattisgarh and Madhya Pradesh. India's first coal-fired power plant was the Hussain Sagar Thermal Power Station, established in 1920 in Hyderabad, during the Nizam's rule. It powered the twin cities of Hyderabad and Secunderabad well into the early 1980s. But it was not until 1956, when the Trombay power station near Mumbai was commissioned, that thermal power was truly heralded as India's mainstay. Moreover, the average age of India's coal-fired power plants is about 12 years, meaning they have a few decades before they could be decommissioned. While India has exported coal to neighbouring Myanmar and Sri Lanka, it has largely used its reserves for domestic power production. Of late, it has even been importing coal as power demand has been steadily rising.

India is yet to reach its peak coal production and consumption, which is expected between the years 2030-35, about 80 years since Britain reached this spot. About 70% of its energy output is currently from coal, accounting for 218 GW of installed capacity. It has more than 350 operational mines and about 120 new ones have been planned. A study by Global Energy Monitor estimates that these mines provide direct employment to almost 3,40,000 miners. This is likely an under-estimation as many from the agriculture sector are seasonal workers at mines. A Council on Energy, Environment and Water (CEEW) study estimates that India's thermal power plants employ about 4,00,000, people, again a likely under-estimation as informal employment at thermal power plants is high. This means that at its peak, about 10 years from now, the coal sector is likely to provide employment to well over a million people, which is about how many miners alone worked in Britain more than a century ago.

Moreover, Britain's per capita energy consumption was almost three times India's in 2022, and this is despite the Russia-Ukraine war-induced energy austerity, and even as the world was at the tail end of the COVID-19 pandemic.

Having made the case that a direct comparison on coal phase-out between the two countries cannot be made, there are lessons that India could learn from the U.K.'s transition particularly in the past decade, and also ensure it does not make the mistakes Britain made in the 1980s and 1990s.

Britain's transition

After committing to phasing out coal by 2025, when Britain had already reduced its use to a fifth of its energy needs, it pursued a holistic transition of not just the workforce of the sector but also the regions and communities that depended on it. Retraining programmes focused on sectors that required skills similar to those in coal mining and power generation such as engineering, heavy machinery operation and maintenance. This was mixed with early retirement and redundancy payments; new education and apprenticeship programmes, and community and regional redevelopment of historically coal-dependent regions, or impetus to set up new industries in their place. The sighting of renewable energy projects, particularly offshore wind farms close to major coal producing regions such as the North Sea off Yorkshire, and repurposing the existing grid infrastructure to transmit wind energy along with remodelling old coal-fired power plants for other forms of energy generation such as biomass in Drax, have helped alleviate some of the fears of job loss and economic slowdown. This is not to say concerns do not remain, but the gradual decline in coal, with growing awareness about climate change, and transparent, fixed timelines to transition, enabled Britain's coal phase-out. Outliers remain, like the protests at the now shuttered Talbot steel plant as the Tata-owned facility attempts to shift from coking coal to electric furnaces, but this might likely be a temporary closure.

While India has set itself a sufficient timeline of 45 more years to attain net zero emissions, there has already been a steady and impressive growth in renewables capacity. But coal-fired energy use also has risen, and the country must begin working on fixing timelines on plant decommissioning, regional redevelopment programmes, and retraining of miners and power plant workforces, bearing in mind that India's historically coal-dependent regions are some of the poorest in the country, and have workers who have largely transitioned from agriculture to mining. Only a holistic, transparent, and early forward planning approach, would hasten a transition that is inclusive and just.

- **Why in News:**
  - The **recent closure of Britain's last coal-fired power plant in Nottinghamshire marks a significant milestone** in the global shift towards renewable energy.
  - While this event has been celebrated as a victory for environmental progress, **it also highlights the complexities and challenges inherent in transitioning away from fossil fuels.**
  - A **closer look at Britain's transition, its historical context, and India's current energy trajectory reveals the unique paths each country must take** toward a sustainable energy future.
- **The Historical Context of Britain's Transition**
  - **Environmental Awareness and Early Legislation**
    - **The Great Smog was a severe air pollution event that occurred in London,** leading to the deaths of thousands of people, and causing significant public health issues.
    - This **environmental disaster forced the U.K. to confront the harmful impacts of coal combustion**, especially in urban areas, and acted as a catalyst for environmental legislation.
    - **The Clean Air Act of 1956, introduced in response to the smog**, was one of the first legislative steps aimed at reducing coal use and improving air quality by restricting the burning of coal in urban spaces.
  - **Geopolitical and Economic Drivers**
    - The **discovery of natural gas in the North Sea in 1965 significantly altered the energy landscape of the U.K.**
    - Natural gas provided a domestic, cleaner alternative to coal, and the country began to build infrastructure to exploit this resource.
    - **This shift was accelerated by geopolitical dynamics during the Cold War**. With domestic coal reserves becoming less economically viable due to depletion, the U.K. faced increasing costs of coal production.
    - At the same time, **there was a desire to reduce dependence on coal imports** from the Soviet Union, which had become a strategic concern.
    - The **combination of a more cost-effective energy source in natural gas and the geopolitical need** to limit reliance on foreign coal **pushed Britain further away from coal dependency.**
  - **The Thatcher Era and Social Impacts**
    - **During the 1980s, the U.K. experienced a significant turning point in its coal industry** under the government of Prime Minister Margaret Thatcher.
    - **Her administration's aggressive approach toward curtailing the power of trade unions,** particularly those representing miners, **led to the forced closure of about 20 coal mines.**
    - **The closures, which occurred despite a year-long strike by miners,** not only marked a major political struggle but also had deep social and economic repercussions.
    - **Many regions that were once heavily reliant on coal mining**, such as parts of Yorkshire, Wales, and Scotland, **experienced severe economic downturns.**
    - **These areas suffered from long-term unemployment**, loss of community identity, and intergenerational poverty—a legacy that lingers in some communities to this day.

- **International Commitments and Final Phase-out**
  - This **long transition away from coal was further reinforced** by Britain's commitment under international agreements **like the 2015 Paris Agreement.**
  - The **decision to phase out unabated coal power by 2025 was a continuation of a decades-long trajectory**, rather than an abrupt change in policy.
  - By the time of this commitment, **the U.K. had already reduced its coal use to about one-fifth of its energy needs**, paving the way for a relatively smooth final phase-out.
  - This **included significant investments in renewable energy infrastructure, such as offshore wind farms, which allowed the U.K. to maintain energy security** while reducing carbon emissions.

- **India's Distinct Path, A Comparative Analysis and Lessons from Britain**
  - **India's Distinct Path of Transition**
    - Contrasting Britain's historical transition, **India is currently navigating its own complex path toward achieving net-zero emissions by 2070,** with a plan to derive half of its energy needs from renewables by 2050.
    - **As of 2023, India is the third-largest carbon emitter globally, with emissions of about 2.9 gigatons**, substantially higher than the U.K.'s 384 million metric tons.
    - However, **India's population is over 20 times that of the U.K**., resulting in per capita emissions of just 2 tons—far below the global average of 4.6 tons and less than half of Britain's 5.5 tons.
    - **This stark difference in per capita emissions underscores the need for tailored energy policies** that address the specific developmental needs and socio-economic conditions of each country.
  - **A Comparative Analysis**
    - Today, **coal remains central to India's energy production**, accounting for 70% of its energy output.
    - **Despite efforts to expand renewable energy capacity, the country has not yet reached its peak coal production and consumption**, which is projected to occur between 2030 and 2035.
    - This **timeline differs significantly from Britain's peak in the 1950s and 1960s,** highlighting the different stages of economic and energy development between the two nations.
    - **Moreover, India's coal sector provides employment to over a million people,** many of whom transitioned from agriculture to mining, making it essential to plan carefully for any future phase-out.
  - **Lessons from Britain's Transition**
    - Although Britain and India's energy journeys differ, **India can draw important lessons from Britain's approach, especially in the past decade.**
    - After committing to phasing out coal, **Britain implemented a multifaceted strategy to address the impact on coal-dependent workers** and communities.
    - This **included retraining programs aimed at industries requiring similar skill sets, early retirement packages,** and the creation of new education and apprenticeship opportunities.
    - **Regional redevelopment efforts helped repurpose coal-reliant infrastructure, such as converting old coal plants to biomass energy production** and establishing renewable energy projects in former mining regions.

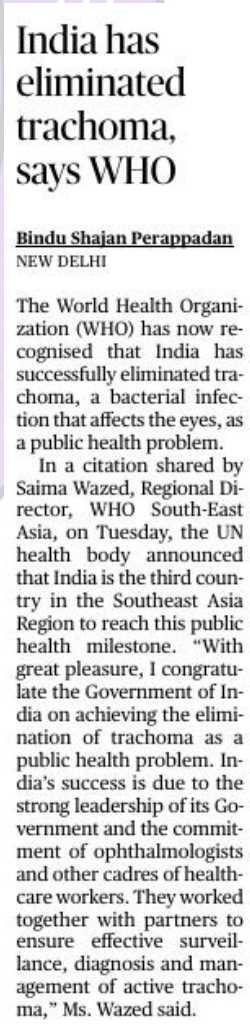
- **India's Path Forward to Sustainable Energy Future**
  - **A Customised Transition Strategy**
    - **India's road to a sustainable energy future is already underway**, marked by impressive growth in renewable energy capacity.
    - However, **it must navigate its transition with careful planning to avoid repeating Britain's missteps.**
    - **A holistic strategy,** featuring clear timelines for **decommissioning coal plants and programs for regional redevelopment, is essential.**
    - This **approach should include training programs for miners and other workers, support for industries that can absorb the transitioning workforce**, and incentives for investment in renewable energy projects in historically coal-dependent regions.

- **Prioritise Social Equity**
  - Given that many coal-producing areas in India are among the poorest in the country, **the shift must prioritise social equity.**
  - A **transition that leaves these communities behind risks deepening economic disparities**
  - **By planning for a just transition**, one that is inclusive and respects the social fabric of its coal-reliant regions, **India can ensure that economic growth and environmental sustainability go hand in hand.**
  - **While India's timeline to reach net-zero emissions is longer than Britain's**, this **extended period provides the opportunity to design** an energy transition **that is both effective and equitable.**

- **Conclusion**
  - The **shuttering of Britain's last coal-fired power plant symbolises a global shift toward renewable energy,** yet it also serves as a reminder of the complex challenges involved in reducing dependence on coal.
  - **India's trajectory, marked by its unique social, economic, and energy needs, necessitates a tailored approach** that considers its ongoing dependence on coal, the economic realities of coal-dependent communities, and the growth potential of renewable energy.
  - **Learning from Britain's successes and mistakes, India can chart a path that balances the urgent need for climate action with the developmental needs of its population,** ensuring a transition that is both inclusive and sustainable.

5. Trachoma
GS 2 (Health)

- **Why in News:** Recently, the World Health Organisation (WHO) has declared that the Government of India has eliminated Trachoma as a public health problem becoming the third country in the South-East Asia Region to achieve this milestone.
- **About Trachoma:**
  - It is a **bacterial infection** that affects the eyes.
  - It is caused by the bacterium **Chlamydia Trachomatis.**
  - **How it spreads?**
    - It **is contagious**; spreading through contact with the eyes, eyelids, nose or throat secretions of infected people, if left untreated it **causes irreversible blindness.**
    - It is found in communities that are living in **poor environmental conditions.**
    - WHO has termed Trachoma as a **neglected tropical disease** and its estimation suggests that 150 million people worldwide are affected by Trachoma and 6 million of them are blind or at risk of visually disabling complications.
  - **Initiatives of Government of India**
    - The Government of India launched the **National Trachoma Control Program in 1963** and later on Trachoma control efforts were integrated into India's **National Program for Control of Blindness (NPCB).**
    - As a result, in 2017, India was declared free from infective Trachoma. However, surveillance continued for trachoma cases in all the districts of India from 2019 onwards till 2024.
    - The **National Trachomatous Trichiasis (TT only) Survey** was also carried out in 200 endemic districts of the country under the National Programme for Control of Blindness & Visual Impairment (NPCBVI) from 2021-24, which was a mandate set by WHO to declare that India has eliminated Trachoma as a public health problem.



India has eliminated trachoma, says WHO

Bindu Shajan Perappadan
NEW DELHI

The World Health Organization (WHO) has now recognised that India has successfully eliminated trachoma, a bacterial infection that affects the eyes, as a public health problem.

In a citation shared by Saima Wazed, Regional Director, WHO South-East Asia, on Tuesday, the UN health body announced that India is the third country in the Southeast Asia Region to reach this public health milestone. "With great pleasure, I congratulate the Government of India on achieving the elimination of trachoma as a public health problem. India's success is due to the strong leadership of its Government and the commitment of ophthalmologists and other cadres of healthcare workers. They worked together with partners to ensure effective surveillance, diagnosis and management of active trachoma," Ms. Wazed said.

- To eliminate trachoma as a public health problem, **WHO recommends the SAFE strategy**
- **The SAFE strategy includes:** Surgery to treat the blinding stage (trachomatous trichiasis); Antibiotics to clear the infection, particularly the antibiotic azithromycin; Facial cleanliness and Environmental improvement, particularly improving access to water and sanitation.
- The 17 other countries that have eliminated trachoma are: Benin, Cambodia, China, Gambia, Ghana, Islamic Republic of Iran, Lao People's Democratic Republic, Malawi, Mali, Mexico, Morocco, Myanmar, Nepal, Oman, Saudi Arabia, Togo and Vanuatu.

6. Association of Southeast Asian Nations (ASEAN)
GS 2 (International relations)

- **Why in News:** The Prime Minister is set to strengthen India's strategic ties with Southeast Asia as he heads to Vientiane, Laos, for the 21st ASEAN-India Summit.
- **About Association of Southeast Asian Nations (ASEAN):**
  - It is an **intergovernmental organization of ten Southeast Asian countries.**
  - It was established on 8 August **1967 in Bangkok**, Thailand, with the **signing of the ASEAN Declaration (Bangkok Declaration).**
  - It aims to **promote economic and security cooperation** among its ten members.
  - **Members:**
    - **Founding members** of ASEAN: **Indonesia, Malaysia, Philippines, Singapore,** and **Thailand**.
    - **Brunei** joined in 1984, **Vietnam** in 1995, **Laos** and **Myanmar** in 1997, and **Cambodia** in 1999.
  - **Secretariat: Jakarta, Indonesia.**
  - **Fundamental principles** of ASEAN are:
    - **Mutual respect** for the independence, sovereignty, equality, territorial integrity**,** and national identity of all nations.
    - The right of every state to lead its national existence **free from external interference,** subversion, or coercion.
    - **Non-interference in the internal affairs** of one another.
    - **Settlement of differences** or disputes in a **peaceful manner.**
    - **Renunciation of the threat** or use of force.
    - Effective cooperation among themselves.
  - The **institutional mechanism** of ASEAN includes:
    - **ASEAN Summit:** It meets annually to discuss regional issues and set policy directions.
    - **ASEAN Coordinating Council (ACC):** It oversees the implementation of ASEAN agreements and decisions.
    - **ASEAN Secretariat:** It supports and facilitates ASEAN's activities and initiatives.
    - **ASEAN Regional Forum (ARF):** It is a platform for dialogue and cooperation on political and security issues among ASEAN member countries and their partners.
    - **Decision Making**: It is done through consultation and consensus.


VIENTIANE

Myanmar to send representative to ASEAN for first time in three years

AP

Myanmar will send a Foreign Ministry official as its representative to the Association of Southeast Asian Nations (ASEAN) summit this week for the first time in three years, as the junta struggles to quell a civil war. ASEAN had barred Myanmar's junta leaders from its summits in the wake of their February 2021 coup. AFP

MCQ Current Affairs
9th Oct, 2024

1. Amangarh Tiger Reserve lies in which one of the following states?

a) Uttarakhand
b) Uttar Pradesh
c) Odisha
d) Madhya Pradesh

2. Consider the following statements regarding Central Consumer Protection Authority (CCPA):

A. It has powers to take suo-moto actions, recall products, and order reimbursement of the price of goods/services.
B. It has powers to pass orders of discontinuation of practices that are unfair and prejudicial to consumers' interests.

Which of the statements given above is/are correct?

a) A only
b) B only
c) A and B
d) Neither of two

3. Consider the following statements regarding Machine Learning (ML):

A. It is a branch of Artificial Intelligence (AI) focused on building computer systems that learn from data.
B. Using historical data as input, these algorithms can make predictions, classify information, and generate new content.

Which of the statements given above is/are correct?

a) A only
b) B only
c) A and B
d) Neither of two

4. Consider the following statements regarding Trachoma:

A. It is a bacterial infection that affects the human eyes.
B. It is a contagious infection and the World Health Organisation declared it as a neglected tropical disease.

Which of the statements given above is/are correct?

a) A only
b) B only
c) A and B
d) Neither of two

5. Consider the following statements regarding Halari donkey:

A. It is used by the Bharwad and Rabari pastoralists for carrying luggage during migration.
B. It is mainly found in the semi-arid region of Rajasthan.

Which of the statements given above is/are correct?

a) A only
b) B only
c) A and B
d) Neither of two

Answers Current Affairs
9th Oct, 2024

1. b
2. c
3. c
4. c
5. a

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