

# NEXT IAS

## DAILY CURRENT AFFAIRS (DCA)

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## VENEZUELA LOSES ITS LAST GLACIER

### In News

- According to the **International Cryosphere Climate Initiative (ICCI)**, Venezuela's only remaining glacier — the **Humboldt, or La Corona**, in the Andes has become "too small to be classed as a glacier".

### About

- The Venezuela had been home to six glaciers in the Sierra Nevada de Mérida mountain range
  - ♦ Five of the glaciers had disappeared by 2011, leaving just the **Humboldt glacier, also known as La Corona**. But it shrank so much that scientists reclassified it as an ice field.
- Venezuela has lost all of its glaciers because The Andes has witnessed a temperature increase in the past seven decades.
  - ♦ Andes is the world's longest continental range of mountains running through parts of Argentina, Bolivia, Chile, Colombia, Ecuador, Peru, and Venezuela .

### Glaciers

- They are essentially large and thick masses of ice that are formed on land due to the accumulation of snow over centuries.
- They usually exist and form in areas where
  - ♦ mean annual temperatures reach near the freezing point;
  - ♦ winter precipitation leads to significant snow accumulations; and
  - ♦ temperatures throughout the remaining year do not cause the complete loss of the previous winter's snow accumulation.

### Why are glaciers disappearing?

- Since the industrial revolution, carbon dioxide and other greenhouse gas emissions have raised temperatures, even higher in the poles, and as a result, glaciers are rapidly melting, calving off into the sea and retreating on land.

### Scenario In India

- India is also at the risk of losing its glaciers.
  - ♦ They are melting at unprecedented rates across the **Hindu Kush Himalayan mountain ranges** and could lose up to 80% of their volume this century if GHG emissions are not drastically reduced, according to a 2023 report.

### Impacts of glacier loss

- Glaciers are a crucial source of freshwater, especially during hot, dry periods, for local communities, plants, and animals.
  - ♦ Their disappearance would mean that one would have to be entirely dependent on spot rainfall for freshwater.
- Melting glaciers add to rising sea levels, which in turn increases coastal erosion and elevates storm surge as warming air and ocean temperatures create more frequent and intense coastal storms like hurricanes and typhoons.
- The cold water that runs off glaciers keeps downstream water temperatures cooler. This is crucial for many aquatic species in the region as they need cold water temperatures to survive,
  - ♦ Glacier loss directly impacts such species, which are an essential part of the food web.

### Measures

- Enact regulations: Limit or prohibit activities such as mining, drilling, development, and tourism in glacier zones.
  - ♦ There should be a complete ban on economic development projects in environmentally sensitive areas, with local people and geologists actively involved to voice their concerns for any future proposals for developments in these areas or their vicinity.
- Research and scientific studies: Conduct ongoing research to understand glacier dynamics, climate impacts, and potential consequences of glacial retreat.
  - ♦ **Use AI and e-DNA techniques** to monitor and analyze glacier data, predict behavior, and identify potential risks.
- Reduce greenhouse gas emissions: Implement measures to mitigate climate change, which is the primary driver of glacier loss.
- Glacier augmentation: Explore techniques to increase ice accumulation, such as artificially enhancing snowfall or spraying water vapor.

### Steps Taken to Protect Glaciers

#### Global Initiatives:

- Hindu Kush Himalayan Monitoring and Assessment Programme (HIMAP): It is a platform for collaboration and coordination among researchers, practitioners, and policymakers working in the Hindu Kush Himalayan (HKH) region.

- The United Nations General Assembly has declared 2025 as the International Year of Glaciers' to raise awareness about the accelerated melting of glaciers .

#### Indian Efforts:

- National Action Plan on Climate Change (2008): Outlines measures to promote glacier conservation, such as satellite monitoring and community-based initiatives.
- Protected Areas: Several areas in the Himalayan states have been declared as national parks, wildlife sanctuaries, and biosphere reserves to safeguard the fragile ecosystem, including glaciers. Examples include Nanda Devi Biosphere Reserve, Gangotri National Park, and Great Himalayan National Park.
- Himansh research station: Located in the remote Spiti region of Himachal Pradesh. Its primary objective is to study the Himalayan glaciers and their response to climate change.

Source: [IE](#)

## SHIFTING OF EARTH'S MAGNETIC POLES

### Context

- According to various research, the Earth's magnetic poles are showing signs of shifting, a natural process that occurs over thousands of years.

### Earth's magnetic field

- It is generated by the complex flow of molten metallic material in the outer core of the planet.
- The flow of this material is affected both by the rotation of Earth and the presence of a solid iron core, which results in a dipolar magnetic field where the axis roughly aligns with the rotational axis of the planet.

### Shifting in Earth's magnetic field

- Earth's magnetic field is a dynamic, shifting phenomena.
- Cooling magma rich in iron minerals is pulled into alignment with Earth's magnetic field, similar to how a needle is pulled to point towards north on a compass.
- According to Paleomagnetic research Earth's magnetic field has shifted and even reversed

in polarity many times in the geological past, approximately every 200,000 to 300,000 years.

### What causes the magnetic poles to flip?

- Earth's magnetic field varies at very short timescales and extremely long ones, ranging from milliseconds to millions of years.
- The interaction of the magnetic field with charged particles in space can alter it at short timescales, while perturbations in the magnetic field at longer timescales are caused by internal processes unfolding in the outer liquid core of the Earth.

### Concerns

- When the magnetic field is prone to flipping, it is in a state of reduced intensity, resulting in a greater exposure of Earth's atmosphere to solar wind and cosmic rays in the form of charged particles.
- It could have significant implications for our technology-dependent society and have effects on power grids as well as satellite communications.
- It could also disrupt the migratory patterns of animals, including birds and sea turtles, that rely on the magnetic field for navigation.

### Concluding remarks

- Paleomagnetic studies have shown that polarity reversals of Earth's magnetic field are not periodic and cannot be predicted. This is largely because of the behavior of the mechanisms that are responsible for it.
- The magnetic field is relatively stable due to which it has enabled life on Earth to persist for almost at least 3.8 billion years.

Source: [Space.com](#)

## NUCLEOSYNTHESIS

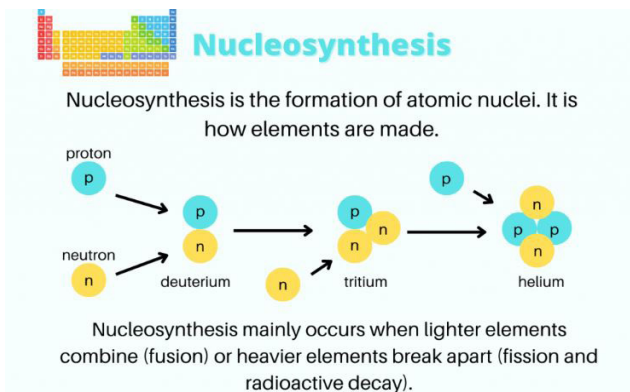
### Context

- Stellar nucleosynthesis is the process by which stars forge elements inside their cores.

### About

- Nucleosynthesis is the process by which elements are formed within stars or during cosmic events like supernovae.
  - ◆ Nucleosynthesis first occurred within a few minutes of the Big Bang.
- It's crucial for understanding the origin of elements in the universe.





- There are several types of nucleosynthesis:
  - ♦ **Big Bang Nucleosynthesis (BBN):** This occurred in the first few minutes after the Big Bang when the universe was hot and dense enough for nuclear reactions to occur. During BBN, light elements like hydrogen, helium, and a small amount of lithium were formed.
  - ♦ **Stellar Nucleosynthesis:** This occurs within stars through nuclear fusion reactions. Hydrogen fuses into helium in the core of stars like our Sun. More massive stars can continue this process, creating heavier elements up to iron through successive fusion reactions in their cores.
  - ♦ **Supernova Nucleosynthesis:** It refers to the process by which elements heavier than iron are formed during the explosive death throes of massive stars known as supernovae.
  - ♦ When a massive star exhausts its nuclear fuel and undergoes a core collapse, or in the case of a white dwarf accreting material from a companion star and reaching the Chandrasekhar limit, a supernova explosion occurs.
  - ♦ **Cosmic Ray Spallation:** High-energy cosmic rays can collide with atomic nuclei in interstellar space, breaking them apart and creating new, lighter elements.

Source: TH

## WHO UPDATED THE BACTERIAL PATHOGENS PRIORITY LIST

### Context

- The World Health Organisation has updated the Bacterial Pathogens Priority List as critical priority pathogens continue to present major global threats.

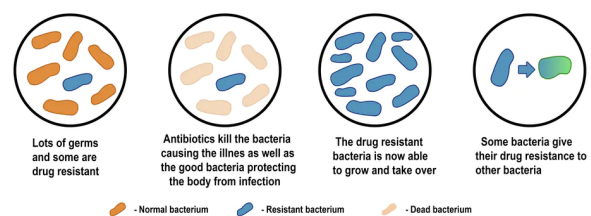
### About

- The list features 15 families of antibiotic-resistant bacteria grouped into critical, high and medium categories for prioritisation.
  - ♦ Critical priority pathogens present major global threats due to their high burden, and ability to resist treatment and spread resistance to other bacteria.
- The list includes gram-negative bacteria resistant to last resort antibiotics, and Mycobacterium tuberculosis resistant to the antibiotic Rifampicin.
  - ♦ The high priority pathogens, including **salmonella and shigella**, are of particularly high burden in low- and middle-income countries, along with **Pseudomonas aeruginosa and Staphylococcus aureus**, which pose significant challenges in healthcare settings.
- Need for the List: By mapping the global burden of drug-resistant bacteria and assessing their impact on public health, this list is key to guiding investment and for grappling with the antibiotics pipeline and access crisis.
  - ♦ Since the first Bacterial Priority Pathogens List was released in 2017, the threat of antimicrobial resistance has intensified, eroding the efficacy of numerous antibiotics and putting many of the gains of modern medicine at risk.

### Antimicrobial Resistance (AMR)

- Antimicrobial Resistance (AMR) occurs when bacteria, viruses, fungi and parasites no longer respond to medicines, making people sicker and increasing the risk of disease spread, illness and deaths.

### HOW ANTIBIOTIC RESISTANCE HAPPENS



- Nearly 700,000 people die of AMR every year. The toll can rise to as many as 10 million by 2050 and eat up 3.8 percent of annual global gross domestic product (GDP).

- Antimicrobials: Antimicrobials are agents used to prevent, control and treat infectious diseases in humans, animals and plants.
  - ♦ They include antibiotics, fungicides, antiviral agents and parasiticides. Disinfectants, antiseptics, other pharmaceuticals and natural products may also have antimicrobial properties.

### Causes for Antimicrobial Resistance

- Overuse and Misuse of Antibiotics: The excessive and inappropriate use of antibiotics in humans and animals is a major driver of antimicrobial resistance. This includes using antibiotics without a prescription, not completing the full course of prescribed antibiotics, and using antibiotics for non-bacterial infections.
- Inadequate Dosage and Duration: When antibiotics are not taken in the correct dosage and for the recommended duration, it can lead to incomplete eradication of the targeted microorganisms, allowing the surviving bacteria to develop resistance.
- Self-Medication: Self-prescription without proper medical guidance contributes to the misuse of antibiotics.
- Antibiotics Consumption in Food-Animals: Use of antibiotics as growth promoters in food animals and poultry is a common practice and later it evolves in the food chain.
- Poor Sanitation: The large proportion of sewage is disposed of untreated into receiving water bodies, leading to gross contamination of rivers with antibiotic residues, antibiotic-resistant organisms.

### Challenges Posed by AMR

- Antibiotic resistance is emerging as the threat to successful treatment of infectious diseases, organ transplantation, cancer chemotherapy and major surgeries.
- The issue of AMR causes out of pocket expenditure on health care, especially on medicines. The use of high order drugs or second-line expensive antibiotics pushing treatment costs high.

#### Measures Taken against Antimicrobial Resistance in India

- National Action Plan on Antimicrobial Resistance (NAP-AMR): It has a focus on the One Health approach & was launched with the aim of involving various stakeholders ministries/ departments.

- AMR Surveillance Network: Indian Council of Medical Research (ICMR) established the AMR surveillance and research network (AMRSN) to generate evidence and capture trends and patterns of drug resistant infections in the country.
- FSSAI has set certain guidelines limiting the antibiotics in food products such as fish and honey.
- National Health Policy, 2017: It terms antimicrobial resistance as one of the key healthcare issues and prioritizes the development of guidelines regarding antibiotic use and check on restricting the growth of antibiotics.
- National Antibiotic Consumption Network (NAC-NET): The network sites compile data on antibiotic consumption in their respective health facilities and send it to National Centre for Disease Control (NCDC).

### Way ahead

- Addressing the challenges posed by AMR requires a coordinated global effort involving healthcare professionals, researchers, policymakers, and the public.
- Further initiatives to promote responsible antimicrobial use, surveillance of resistance patterns, development of new drugs, and international collaboration are crucial to mitigating the impact of AMR on public health.

Source: [TH](#)

## NEWS IN SHORT

### DEDA METHOD OF MURIA TRIBE

#### Context

- Muria tribal farmers who migrated from Chhattisgarh to Godavari Valley are still practicing 'deda', a traditional method of preserving seeds.

#### What is the Deda method?

- In this method the seeds are preserved in leaves and packed almost airtight to look like boulders from a distance.
- The packaged seeds are, in turn, woven with Siali leaf (*Bauhinia vahlii*), which is locally known as 'addakulu' to make the Deda.

- The method guarantees protection of seed from pests and worms and the stored seeds can be used for cultivation for up to five years.

### Multi-layer protection

- A Deda has three layers. In the first layer, wood ash is spread inside the Siali leaves.
- Later, the ash is covered with lemon leaves to form a casing, and, lastly, the seeds are preserved inside the casing and sealed.

Source: [TH](#)

## PORT OF CALL

### In News

- Spain has refused permission for an Israel-bound ship carrying arms to call at the southeastern port of Cartagena

### Port of Call

- It refers to a designated location where a ship or vessel stops during its journey.
- These stops allow ships to refuel, restock supplies, and carry out necessary maintenance. Ports of call are essential for both commercial and passenger vessels, as they provide a temporary haven for ships traveling between different destinations.
- Types of Ports of Call:
  - ♦ **Commercial Ports:** These handle cargo and freight, facilitating trade and commerce.
  - ♦ **Cruise Ports:** Specifically cater to cruise ships, offering amenities and attractions for passengers.
  - ♦ **Military Ports:** Used by naval vessels for strategic purposes.
  - ♦ **Transit Ports:** Provide a brief stopover during long voyages.
- Purpose
  - ♦ Ships can replenish their fuel and energy supplies.
  - ♦ Vessels stock up on food, water, and other essential items.
  - ♦ Crew members may embark or disembark at these ports.
  - ♦ Ships can undergo necessary repairs and maintenance.

Source: [IE](#)

## MANIPURI PONY (MEITEI SAGOL)

### In News

- The Government of Manipur has recently joined hands with various organisations and associations to save the Manipuri Pony or Meitei Sagol

### About Manipuri Pony

- It is one of the seven recognised horse and pony breeds of India.
  - ♦ The others include the Marwari Horse, the Kathiawari Horse, the Zanskari Pony, the Spiti Pony, the Bhutia Pony and the Kachhi-Sindhi Horse.



- The population of the Manipuri Pony, a highly valued breed, has been dwindling rapidly in recent times
  - ♦ In the last livestock census done in 2019, the number had dropped further to 1,089.
- **Utility:** They are used in Traditional events like Lai haraoba, polo and horse races,
  - ♦ they were also utilised as mounts by cavalry of the Manipur Kingdom which was feared throughout upper Burma during the 17th century,
- Threats : Shrinkage of wetlands, rapid urbanisation and encroachment; restriction of pony usage except in the game of polo; uncontrolled diseases; and the exodus of ponies to neighbouring states
- Steps : The Manipur government declared the Manipuri Pony as an Endangered Breed in 2013.

Source: [DTE](#)

## MPLADS SCHEME

### In News

- In the last 10 years, Delhi's MPs have not utilised the funds under the Members of Parliament Local Area Development (MPLAD) scheme.

### What is MPLAD Scheme?

- Introduced in: September 1993.
- Funded by: Central Sector Scheme (Wholly Government of India).
- Annual Entitlement: 5 Crores.
- Objective: Enable the MPs to suggest and execute developmental works of capital nature.
- Funds Utilisation: LS members can recommend works within their Constituencies.
  - ♦ **Elected Members of RS** can recommend works **within the State of Election**.
  - ♦ **Nominated Members** of both the houses can recommend works **anywhere in the country**.
- Administration: Ministry of Statistics and Programme Implementation.
- Implementing Authority: District Authority under DC/DM/Commissioner (Municipal)
- Areas inhabited by Scheduled Caste and Scheduled Tribe: At least 15 percent of the MPLADS entitlement for the year for SC & 7.5 percent for areas for STs.

Source: IE

### SACHETISATION OF F&O TRADE

#### Context

- Recently, the Chief Economic Advisor (CEA) emphasised the need to reconsider Sachetisation of Futures and Options (F&O) Trade as it requires a different level of financial literacy.

#### About the Sachetisation of F&O Trade

- The world of finance and trading is constantly evolving, with new products and services being introduced to cater to the diverse needs of investors.
- One such development in the Indian financial market is the 'Sachetisation' of Futures and Options (F&O) Trade.

#### What is Sachetisation?

- It refers to the process of making financial products and services available in smaller, more manageable packets.

#### Asian Crisis: A Lesson from History

- The Asian crisis of 1997-98 was characterized by a financial bubble that led to devastating economic consequences when it burst.
  - ♦ The CEA noted that whenever financial sector development precedes national development, the story has not ended well for other countries.

- It has been applied to the F&O trade, allowing retail investors to participate in the market with smaller investments, by democratising access to financial markets.
  - ♦ The **financial sector** has a responsibility to ensure that the **capital market grows** in those areas where Indian household savings can be harnessed for productive purposes.

#### Shift in Household Finances

- Recent data has shown a decline in net financial household savings to a five-year low in FY23, a decline of Rs 9 lakh crore in three years to Rs 14.16 lakh crore at the end of FY23.

Source: IE

### NILE RIVER AND HIGH PYRAMID DENSITY

#### Context

- Recently, researchers found that the discovery of the 'long-lost' tributary of river Nile fits perfectly into the earlier anticipations about the high pyramid density between Giza and Lisht.

#### About Nile River

- It is the longest river in the world, and has been the lifeline of civilizations since ancient times.





- Flowing from south to north through eastern Africa, it begins in the rivers that flow into Lake Victoria, located in modern-day Uganda, Tanzania, and Kenya, and finally empties into the Mediterranean Sea.

### Tributaries

- Major Tributaries are: White Nile, the Blue Nile, and the Atbara.
- The White Nile and the Blue Nile are the Nile's major tributaries that feed into this river.
  - ◆ The **Blue Nile**, which originates from **Lake Tana** in the **Ethiopian Highlands**, contributes about 85% of the flow of the Nile River.

### Places Along the Nile Basin

- The Nile River flows through or along the border of 10 African countries, namely, Burundi, Tanzania, Rwanda, the Democratic Republic of the Congo, Kenya, Uganda, South Sudan, Ethiopia, Sudan, and Egypt.
- The river's fertile banks have supported large populations, influencing cultural developments, and fostering spiritual growth and education along its banks since ancient times.

### Nile and the Pyramids

- The Nile River has played a significant role in the construction of Egypt's iconic pyramids.
- Most of Egypt's pyramids can be found in a 50 km, north-south stretch of desert between Giza and the village of Lisht.
  - ◆ The **high pyramid density** in this region can be explained by the **proximity of the Ahramat Branch, an extinct branch of the Nile**, that was likely used **to transport heavy construction materials**, fits perfectly into the earlier anticipations about the high pyramid density between Giza and Lisht.

Source: IE

## CALCIUM CARBIDE

### Context

- The Food Safety and Standards Authority of India (FSSAI) has alerted traders'/fruits handlers/Food Business Operators (FBOs) operating ripening chambers to strictly ensure compliance with the prohibition on calcium carbide for artificial ripening of fruits, particularly during the mango season.

### About

- Calcium carbide, commonly used for ripening fruits like mangoes, releases acetylene gas which contains harmful traces of arsenic and phosphorus.
- Concerns: These substances, also known as 'Masala', can cause serious health issues such as dizziness, frequent thirst, irritation, weakness, difficulty in swallowing, vomiting and skin ulcers, etc.
  - ◆ Additionally, acetylene gas is equally hazardous to those handling it.
- Due to these dangers, the use of calcium carbide for ripening fruits has been banned under the Food Safety and Standards (Prohibition and Restrictions on Sales) Regulations, 2011.
- Ethylene Gas: FSSAI has permitted the use of ethylene gas as a safer alternative for fruit ripening in India.
  - ◆ Ethylene gas can be used at concentrations up to 100 ppm (100 µl/L), depending upon the crop, variety and maturity.
  - ◆ Ethylene, a naturally occurring hormone in fruits, regulates the ripening process by initiating and controlling a series of chemical and biochemical activities.
    - ◆ The treatment of unripe fruits with ethylene gas triggers the natural ripening process until the fruit itself starts producing ethylene in substantial quantities.

Source: [PIB](#)

## IMD ISSUES RED ALERT FOR HEAT WAVES

### Context

- IMD announced the onset of monsoon over the south Andaman Sea and the Nicobar Islands, while it also warned of a 'heat wave to severe heat wave' over northwest India.

### About

- A red warning implies that local agencies need to take action to prevent extreme heat-related emergencies.
- A Heat Wave is a period of abnormally high temperatures, more than the normal maximum temperature that occurs during the summer season in the North-Western parts of India.



- Heat Waves typically occur between March and June, and in some rare cases even extend till July.
- Heat wave is considered if the maximum temperature of a station reaches at least 40°C or more for Plains and at least 30°C or more for Hilly regions.
- Based on Departure from Normal:
  - ♦ **Heat Wave:** Departure from normal is 4.5°C to 6.4°C.
  - ♦ **Severe Heat Wave:** Departure from normal is >6.4°C.
- Based on Actual Maximum Temperature:
  - ♦ **Heat Wave:** When actual maximum temperature  $\geq 45^\circ\text{C}$ .
  - ♦ **Severe Heat Wave:** When actual maximum temperature  $\geq 47^\circ\text{C}$ .
- The health impacts of Heat Waves typically involve dehydration, heat cramps, heat exhaustion and/or heat stroke.

Source: [IE](#)

## PSYCHEDELIC DRUG

### Context

- Researchers call for home-grown clinical trials of psychedelic drugs

### About

- Psychedelics or psychedelic drugs, are a subclass of a broader class of drugs commonly referred to as hallucinogenic drugs.
- These drugs alter one's conscious perception and thinking processes (cognition) in such a manner that the individual's conscious experience of the world is altered in a way different than other drugs alter it.

### Effects of Psychedelics

- Dizziness, muscle weakness, ataxia (impaired muscle coordination), a rise in body temperature, and increased reflexes.
- Increases in blood pressure, heart rate, and dilated pupils.

### Can such substances cause harm?

- Death due to direct toxicity of LSD, psilocybin or mescaline has not been reported despite 50-plus years of recreational use. An overdose requires cardiac monitoring and supportive management.
- The psychological effects of psychedelics depend on the interaction between the drug and the user's mindset (together called a set), and the environmental setting.
- People with a personal or family history of psychosis are strongly discouraged from experimenting with psychedelics.

Source: [DTE](#)

